

COLLEGE CATALOG

1981/82



INDIANA VOCATIONAL TECHNICAL COLLEGE

COLLEGE CALENDAR

Winter Quarter, 1980-81

November 17-19, 1980.....	<i>Registration and Counseling</i>
November 20, 1980.....	<i>Classes Begin</i>
November 27-28, 1980.....	<i>Thanksgiving Holiday</i>
December 1, 1980.....	<i>Close of Late Registration</i>
December 22, 1980 - January 2, 1981.....	<i>Winter Vacation</i>
January 5, 1981.....	<i>Classes Resume</i>
February 20, 1981.....	<i>Classes End</i>

Spring Quarter, 1980-81

February 23-27, 1981.....	<i>Registration and Counseling</i>
March 2, 1981.....	<i>Classes Begin</i>
March 9, 1981.....	<i>Close of Late Registration</i>
March 15, 1981.....	<i>Founder's Day - 18 Years</i>
May 15, 1981.....	<i>Classes End</i>

Summer Quarter, 1981-82

May 26-29, 1981.....	<i>Registration and Counseling</i>
June 1, 1981.....	<i>Classes Begin</i>
June 8, 1981.....	<i>Close of Late Registration</i>
July 3, 1981.....	<i>Independence Day Holiday</i>
August 14, 1981.....	<i>Classes End</i>

Fall Quarter, 1981-82

August 24-28, 1981.....	<i>Registration and Counseling</i>
August 31, 1981.....	<i>Classes Begin</i>
September 7, 1981.....	<i>Labor Day Holiday</i>
September 8, 1981.....	<i>Close of Late Registration</i>
November 13, 1981.....	<i>Classes End</i>

Winter Quarter, 1981-82

November 16-18, 1981.....	<i>Registration and Counseling</i>
November 19, 1981.....	<i>Classes Begin</i>
November 26-27, 1981.....	<i>Thanksgiving Holiday</i>
December 9, 1981.....	<i>Close of Late Registration</i>
December 21, 1981 - January 3, 1982.....	<i>Winter Vacation</i>
January 4, 1982.....	<i>Classes Resume</i>
February 19, 1982.....	<i>Classes End</i>

Spring Quarter, 1981-82

February 22-26, 1982.....	<i>Registration and Counseling</i>
March 1, 1982.....	<i>Classes Begin</i>
March 8, 1982.....	<i>Close of Late Registration</i>
March 15, 1982.....	<i>Founder's Day - 19 years</i>
May 14, 1982.....	<i>Classes End</i>

Summer Quarter, 1982-83

May 24-28, 1982.....	<i>Registration and Counseling</i>
May 31, 1982.....	<i>Memorial Day Holiday</i>
June 1, 1982.....	<i>Classes Begin</i>
June 18, 1982.....	<i>Close of Late Registration</i>
July 5, 1982.....	<i>Independence Day Holiday</i>
August 13, 1982.....	<i>Classes End</i>

Fall Quarter, 1982-83

August 23-27, 1982.....	<i>Registration and Counseling</i>
August 30, 1982.....	<i>Classes Begin</i>
September 6, 1982.....	<i>Labor Day Holiday</i>
September 7, 1982.....	<i>Close of Late Registration</i>
November 12, 1982.....	<i>Classes End</i>

Winter Quarter, 1982-83

November 15-17, 1982.....	<i>Registration and Counseling</i>
November 18, 1982.....	<i>Classes Begin</i>
November 25-26, 1982.....	<i>Thanksgiving Holiday</i>
December 9, 1982.....	<i>Close of Late Registration</i>
December 20, 1982 - January 3, 1983.....	<i>Winter Vacation</i>
January 4, 1983.....	<i>Classes Resume</i>
February 18, 1983.....	<i>Classes End</i>

Spring Quarter, 1982-83

February 21-25, 1983.....	<i>Registration and Counseling</i>
February 28, 1983.....	<i>Classes Begin</i>
March 7, 1983.....	<i>Close of Late Registration</i>
March 15, 1983.....	<i>Founder's Day - 20 Years</i>
May 13, 1983.....	<i>Classes End</i>

The education programs, courses, descriptions of courses, regulations and fees shown in this catalog are effective Fall Quarter, 1980-81. This publication and its provisions are not in any way a contract between the student and Indiana Vocational Technical College. The College reserves the right to revise any section or requirement at any time.

Published by Indiana Vocational Technical College, 5221 Ivy Tech Drive, P. O. Box 1763, Indianapolis, Indiana, 46206. Telephone (317) 872-3210.

Indiana Vocational Technical College is an Equal Opportunity/Affirmative Action state College.



Message from the President

"In my brief association with Ivy Tech, I have become very aware of the College's fundamental contributions to the economic and social vitality and development of the State.

Today, as we battle inflation and unemployment, Ivy Tech training becomes even more important in leading the way toward greater productivity, efficiency and individual reward."

Myron M. Eicher

DEAR IVY TECH STUDENTS:

On behalf of the Board of Trustees, faculty, and staff of Indiana Vocational Technical College, I wish to welcome you to the College.

In our dynamic and ever-changing economy, opportunities abound for those who are skilled and educated. The Indiana General Assembly and the citizens of this State have recognized the importance of post-secondary vocational education by establishing and supporting this unique institution popularly known as Ivy Tech. Ivy Tech offers an opportunity to obtain a wide range of program and course offerings in technical, occupational, and continuing education.

The faculty at Ivy Tech is committed to serving not only in the classroom and shop, but will assist with personal needs as the school year unfolds. Members of the Student Services staff and other support personnel are readily available to answer questions and to assist in every way to ensure success as a student and member of the college community.

The technology of most fields is ever-changing. It is important that each of you stay abreast of new

developments in your respective fields so that you are prepared to meet future demands placed upon you.

After you complete the chosen program or courses, you are urged to commit time to continuing your education.

Education is, in fact, a life-long process and Ivy Tech is eager to respond to your interests and needs.

We hope that you and others with whom you come in contact will use the College and its resources to help you reach your goals.

Best of luck in your endeavors at Ivy Tech and warmest wishes for success in the years ahead.

Myron M. Eicher

Myron M. Eicher, President

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HOW TO USE THIS CATALOG

GENERAL INFORMATION

The Table of Contents on page 2 lists the topics covered in this catalog. A detailed alphabetical listing of topics is to be found in the Index which begins on page 173.

1. Indiana Vocational Technical College (IVTC) offers instructional programs and courses at 13 different regional institutes in Indiana.
2. A map and address list of all IVTC regional institutes are on page 5.
3. You may study at any institute you wish.

INSTRUCTION

What programs and courses does IVTC offer and where can I take them?

The instructional programs and courses offered by the College are listed on pages 23 through 78.

To find out where specific programs and courses are offered in Indiana, please see the chart on pages 21 and 22, or see the map that is included in each program description.

ELIGIBILITY

Am I eligible to enroll?

To find out if you are eligible for admission to IVTC, and to learn about the procedures for admission, please see page 8.

COST

How much does it cost to study at IVTC?

Tuition and fees are listed beginning on page 15.

FINANCIAL AID

Can I get financial help?

Financial aid is available. Please see page 10.

TO ENROLL

Write or call the region where you wish to study and obtain admission application forms.

- ... submit the completed admission application to the region you plan to attend, and
- ... register on the registration dates listed in the College Calendar on the inside of the cover of this Catalog.

Nondiscrimination Policy-Equal Opportunity/ Affirmative Action Program



The Indiana Vocational Technical College will seek to develop degree credit programs, courses, and community service offerings, and provide counseling and placement service for all individuals regardless of race, color, creed, religion, sex, national origin, physical or mental handicap, or age. The College provides for open admission of persons regardless of race, color, creed, religion, national origin, sex, physical or mental handicap, or age. Furthermore, the College will intensify its concern and elevate its professional competence to the elimination of the conditions from which discrimination springs.

COLLEGE PROFILE

History Of The College

On March 15, 1963, the Indiana General Assembly created the Indiana Vocational Technical College and appropriated \$50,000 for its development. A State Board of Trustees was appointed; and, in 1964, the Trustees appointed a director. The first training program was established in 1965.

The General Assembly approved several amendments to the original legislation establishing the regional concept for the College and appropriated \$2,800,000 to operate the new institution. Dr. Frederic M. Hadley was elected the first president on July 1, 1966. Also in 1966, Ivy Tech-Indianapolis arranged for vocational education courses to be given at Indianapolis Public Schools Mallory Division and for the Manpower Development Training Act (MDTA) programs at the Weir Cook Airport facility. Wabash Valley Regional Institute at Terre Haute and St. Joseph Valley Regional Institute at South Bend were awarded funds to plan and construct the first Ivy Tech regional facilities, and along with White River Valley Regional Institute at Richmond were chartered in 1967. By 1968, nine other regional institutes had been chartered.

In January, 1969, Dr. Harry A. McGuff was elected the second president of Ivy Tech. Under his administration, land and building acquisitions contributed to the growth of the College. The City of Gary made available a 30-acre site adjacent to the new vocational high school. In Fort Wayne, a former high school building was leased to the College. An armory in Columbus and space in the City Building were donated to the College, and office space was rented in New Albany. The 1968-69 Fall Quarter enrollment reached 3,233 credit students. The Ivy Tech Foundation was created in 1969 to promote educational and charitable functions and to support the activities of the College.

In 1971, the State Legislature appropriated \$8 million to Ivy Tech for the biennium as part of the higher education appropriations for the six state-supported educational institutions. The Ivy Tech Foundation broke ground for an administration building on Ivy Tech Drive in Robbins Park in Indianapolis to house the executive offices of the College. W. Dwight Renner was elected the third President of Ivy Tech in July, 1972. Enrollment reached 5,833 credit students in the Fall Quarter.

The General Assembly granted bonding authority for

facility construction at Gary, Evansville, Richmond and Sellersburg in 1973 and enrollment reached 6,482 students in credit courses. Glenn W. Sample, a member of the State Board of Trustees and Chairman of the Ivy Tech Foundation, was elected the fourth president in 1975. Construction of facilities at Kokomo and Fort Wayne was undertaken by the Ivy Tech Foundation. In 1976, an Ivy Tech Foundation-financed construction project was launched at Muncie. Enrollment reached 16,019 credit students, and the General Assembly appropriated \$11.5 million for operation of the College.

With funding assistance from the State Board of Vocational Technical Education, a major curriculum restructuring project with acquisition of additional equipment was initiated for the certificate and degree programs. The College reached a new level in student aid by awarding over \$2,367,000 to 2,810 students in 1977.

Approval was obtained in 1978 for the College to purchase the American United Life Insurance Company building to house the Central Indiana Regional Institute and Executive Headquarters offices. Funding was approved by the State Legislature to establish additional facilities at Lafayette and Madison, and enrollment in that year reached a record 18,946 credit students.

Ivy Tech passed the 20,000 credit student enrollment milestone in the Fall Quarter of 1979 with 20,419 students registered. The College received an appropriation of \$250,000 from the General Assembly to conduct a facilities need study at the Columbus Regional Institute, and ground was broken at the Fort Wayne site for a new 42,000 square foot Trade and Technical Building and Apprenticeship Facility. The Ivy Tech Foundation received a gift of the St. Anthony Hospital in Terre Haute. Through the Ivy Tech Foundation, the College has received many gifts of cash, real estate, equipment and securities. All of these have been significant in the development of the College.

In January, 1980, John V. Barnett, a member of the State Board of Trustees, was appointed interim president of the College.

On September 3, 1980, M. M. Eicher was elected as the fifth president of the College. The 1980 Fall Quarter enrollment reached the milestone of 23,661 credit students.

Organization Of The College

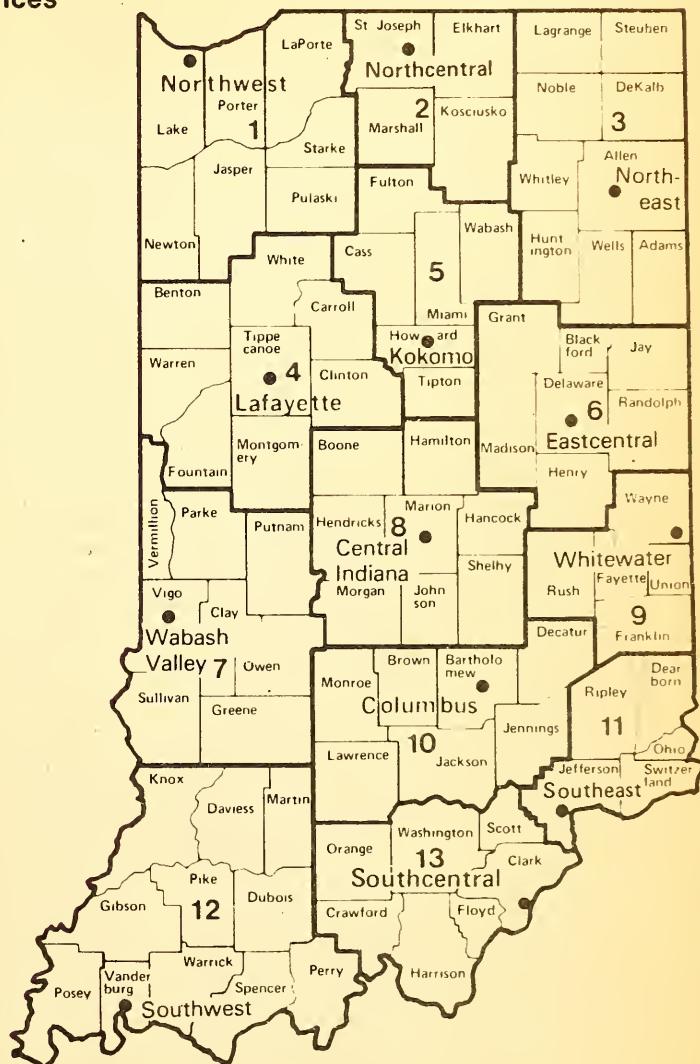
Consistent with legislative authority to provide occupational education throughout the State, Ivy Tech offers a wide range of programs and courses through a system of thirteen regions in coordination with Executive Headquarters.

Each region encompasses four or more counties and col-

lectively serves the State of Indiana. Courses or programs may be taught in hospitals and medical facilities, public schools, business offices, union halls, industrial plants and other appropriate locations, in addition to the permanent regional sites. Most Indiana residents live within at least 50 miles of one of the College's educational facilities.

College Administrative Offices

- 01 IVY TECH NORTHWEST
1440 East 35th Avenue
Gary, Indiana 46409
Phone 219/981-1111
- 02 IVY TECH NORTHCENTRAL
1534 West Sample Street
South Bend, Indiana 46619
Phone 219/289-7001
- 03 IVY TECH NORTHEAST
3800 North Anthony Boulevard
Fort Wayne, Indiana 46805
Phone 219/482-9171
- 04 IVY TECH LAFAYETTE
3208 Ross Rd.
P.O. Box 6299
Lafayette, Indiana 47903
Phone 317/477-7401
- 05 IVY TECH KOKOMO
1815 East Morgan Street
Kokomo, Indiana 46901
Phone 317/459-0561
- 06 IVY TECH EASTCENTRAL
4100 Cowan Road, P.O. Box 3100
Muncie, Indiana 47302
Phone 317/289-2291
- 07 IVY TECH WABASH VALLEY
7377 Dixie Bee Road
Terre Haute, Indiana 47802
Phone 812/299-1121
- 08 IVY TECH CENTRAL INDIANA
1315 East Washington Street
Indianapolis, Indiana 46202
Phone 317/635-6100
- 09 IVY TECH WHITEWATER
2325 Chester Boulevard
P.O. Box 1145
Richmond, Indiana 47374
Phone 317/966-2656
- 10 IVY TECH COLUMBUS
646 Franklin Street
Columbus, Indiana 47201
Phone 812/372-9925
- 11 IVY TECH SOUTHEAST
First and Broadway, P.O. Box 434
Madison, Indiana 47250
Phone 812/265-2580
- 12 IVY TECH SOUTHWEST
3501 First Avenue
Evansville, Indiana 47710
Phone 812/426-2865
- 13 IVY TECH SOUTHCENTRAL
8204 Highway 31 West
Sellersburg, Indiana 47171
Phone 812/246-3301



IVY TECH EXECUTIVE HEADQUARTERS
5221 Ivy Tech Drive
P.O. Box 1763
Indianapolis, Indiana 46206
Phone 317/872-3210

Accreditation and Affiliations

Indiana Vocational Technical College (Ivy Tech) is committed to development and maintenance of high standards of excellence, the continued improvement of its educational program and effectiveness of instruction through a scientific and professional approach to the solution of educational problems. The Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools has accredited ten of Ivy Tech's thirteen Regional Institutes and awarded candidate status to the other three, as follows:

Region No.	Region Name	Accreditation Status
01	Northwest	Candidate Status
02	Northcentral	Accredited
03	Northeast	Accredited
04	Lafayette	Accredited
05	Kokomo	Accredited
06	Eastcentral	Accredited
07	Wabash Valley	Accredited
08	Central Indiana	Accredited
09	Whitewater	Candidate Status
10	Columbus	Accredited
11	Southeast	Candidate Status
12	Southwest	Accredited
13	Southcentral	Accredited

Accreditation does not insure transferability of credits to other institutions. Students interested in transferring to another institution should contact the receiving institution to discuss the transferability and evaluation of Ivy Tech credits.

Several allied health programs and other College programs are also accredited by other professional associations. The College is approved for the education of veterans and is endorsed by the Indiana Division of Vocational Rehabilitation.

Ivy Tech also holds membership in the American Association of Community and Junior Colleges, Indiana Conference for Higher Education, Indiana Association of College Admissions Counselors, Indiana Student Financial Aid Association, and the National Association of College and University Business Officers.

College Philosophy

Each individual, regardless of economic or social status, should be provided the opportunity to develop to society's ultimate benefit.

Post-secondary occupational education is an increasing necessity for an ever-growing portion of the citizens of Indiana. Ivy Tech demonstrates the intent of the General Assembly of the State of Indiana by providing occupational education through a coordinated system of regional institutes located throughout the State.

Technical and related education is an essential part of an occupational curriculum to enable students to develop self-awareness and social responsibility to successfully compete in a chosen occupational field.

Programming should be directed towards serving the needs of all individuals within their community as well as the needs of the community as a whole.

College Goals

The following goals are established for the Indiana Vocational Technical College system:

- Consistent with the manpower needs of Indiana, the College will offer relevant occupationally-oriented, post-secondary education and training to develop its students to the desired level of competence.
- The College will offer occupationally-oriented, continuing education and training consistent with the identified needs of interested groups in the State of Indiana.
- Consistent with the individual student's interest, needs and abilities, the College will offer a wide range of meaningful occupationally-oriented education and training programs with multiple entry and exit opportunities for each of its regions.
- The College will strive to provide the opportunity for citizens of the State to gain occupational competence regardless of their financial resources, previous educational experiences or geographic location.
- The College will provide the opportunity for each applicant to gain occupational competence regardless of sex, race, color, national origin, creed or religion, age or physical or mental handicap.
- The College will encourage, throughout the State of Indiana, the development of understanding, acceptance and support for occupationally-oriented education and training and will communicate the valuable contribution it makes to the individual, community, State and nation.

- The College will prudently use all its resources to carry out its legislatively-mandated mission in an accountable manner.
- The College will provide, within each program offering, educational and training experiences supportive of the social, cultural and personal development of the individual designed to enhance the opportunities for obtaining and retaining gainful employment.
- The College will cooperate and strive for coordination among all providers of occupationally-oriented training and education in all educational sectors as appropriate.
- The College will continue to develop a dynamic and flexible delivery system capable of adapting its offerings to meet the changing technological and socioeconomic needs of the community, state and nation.

Programs and Courses Offered

Ivy Tech offers a wide variety of occupational learning experiences at each of its thirteen regional institutes. These offerings may be for credit or non-credit (informational activities) and may be a course, series of courses and/or regular on-going programs of the College. A program and course locator chart is included on pages 21 and 22 of this catalog.

Alumni

All former regularly enrolled students are members of the Ivy Tech Alumni Association, and by making an annual contribution, are entitled to an active voice in the affairs of the association. All alumni are encouraged to have an active voice in their association and maintain beneficial relations between the College and its alumni; promote the continued growth of the College; and maintain a similar bond of unity of purpose which the alumni held while students at the College.

The association is designed as a college-wide organization with the goal of a chapter in each region.

Ivy Tech Foundation

The Ivy Tech Foundation is a non-profit, tax-exempt organization incorporated in 1969 to promote educa-

tional, scientific and charitable functions, and various other activities in connection with and/or at the request of Indiana Vocational Technical College. Its purpose is to operate solely for the benefit of, to perform the functions of, and to carry out the purposes of Indiana Vocational Technical College. The Foundation receives and administers gifts, grants, bequests, equipment donations, contracts and patents for the benefit of the College.

Visits To The College

Visitors and prospective students are welcome at all of the regional sites and other locations of the College during regular College hours Mondays through Fridays. Should special tours be desired, please contact the desired regional administrative office.

College Office Hours

Ali campus offices are open from 8:00 A.M. to 5:00 P.M. except for Saturdays, Sundays and holidays. On a needs basis these offices may remain open during periods beyond the regular hours in selected regions. The bookstore, business office, and some other offices may observe variable hours.



STUDENT SERVICES



Admissions

Admission Policy

It is the policy of the College to provide open admission to residents of the State of Indiana. Applicants are admitted regardless of race, color, creed or religion, national origin, sex, age, or physical or mental handicap, if otherwise qualified. Residents of other states and international students are admitted under the same policy providing they do not displace Indiana citizens. The open admission policy grants access to all persons above the usual high school age and to those who have withdrawn from high school. International students must, in addition, comply with the special requirements outlined for international students. Limits may be placed on the number of students admitted or enrolled due to limitations in facilities, equipment and/or resources.

General Admission Requirements

An applicant may be admitted to the College as a regular student subject to meeting one of the following three requirements:

1. Be a high school graduate, or
2. Have successfully completed a high school equivalency examination, or
3. Have demonstrated an interest in and need for post-secondary occupational education as offered by the College.

Regular Admission

A Regular Admission occurs when a person has met the general admission requirements to enroll in a program, course or courses, with no special admission requirements, and the College has given him/her notice of acceptance.

Special Admission

A Special Admission occurs when a person has met the general admission requirements and, in addition, has met the special requirements for admission to a program, course or courses, and the College has given him/her notice of acceptance.

Admission Procedure

The applicant should accomplish the following in order to be admitted to the College:

1. Complete an application for admission to the College.
2. Submit the application for admission to the Office of Student Services of the chosen regional institute.
3. Provide an official transcript of high school and/or post-secondary work. Official transcripts must be sent from the institution previously attended directly to the regional institute.

Re-Admission to the College

Students who have interrupted their educational program at Ivy Tech should notify the Admissions Office in advance of registration. A student who has been suspended from the College, who later satisfies eligibility requirements, may request re-admission.

Transfer Students

Transfer students must meet the general admission requirements of the College.

Students may transfer from other post-secondary institutions and may receive an advanced standing with credit awarded for completed courses as they apply to their chosen program of study at Indiana Vocational Technical College. These students must present an official transcript from the institution previously attended. The College reserves the right to refuse admission or conditionally admit students who have been dismissed from other institutions for disciplinary reasons.

International Students

Ivy Tech welcomes qualified students from other countries and seeks to make their educational ex-

periences pleasant and meaningful. International students must meet the general admission requirements plus the following:

1. *Proof of English language proficiency.* This requirement may be met through taking the "Test of English as a Foreign Language" (TOEFL) or other appropriate test and demonstrating sufficient English language proficiency to benefit from their intended instructional program. Applications may be obtained from bi-national agencies, United States Information Service (U.S.I.S.) offices or by applying directly to "Educational Testing Service," Princeton, New Jersey. Approximately six weeks is required for the College to receive the results from this test.
2. *Proof of adequate financial support.* The international student must show proof of adequate financial support during the period of study at the College. An estimate of the amount of funds required will be provided the applicant in response to filing an admission application. Immigration regulations prevent students from earning any substantial portion of this amount and there are virtually no scholarships or educational loans available to them. International students are requested to transmit a letter from a government official or bank official showing that there are sufficient funds to cover the cost of their education while attending the College, and that these funds will be available to cover the cost of college in the United States.
3. *Sponsorship and support.* International students are also required to submit a completed U.S. Immigration and Naturalization Service Affidavit of Support (Form I-134) to the Regional Admissions Office.

Handicapped Students

College programs and appropriate facilities shall be accessible to the student with physical handicaps. Reserved parking and special restroom facilities are to be available at key locations at each regional institute.

The Ivy Tech Learning Resources Center accommodates with special assistance the blind, deaf, and other physically impaired students. In addition, some skill classes, tutors, readers, and special educational materials and equipment are available when appropriate to assist handicapped students.

Support services are also available to aid handicapped students with career planning, financial aid, personal counseling and placement. The College

staff works closely with the Department of Vocational Rehabilitation and other service agencies to assist all physically and psychologically impaired students through available resources.

Students with handicaps are urged to contact the student services staff for help with their unique problems as students of Ivy Tech.

Counseling Services

The office of Student Services in each region offers counseling to all students on a wide variety of concerns. Students may obtain individual and group counseling in areas such as identifying abilities or occupational interest, developing realistic educational or career plans, improving study skills, working through personal concerns, interpersonal relationships and other needs.

In addition to counseling services provided by the Office of Student Services, the College utilizes a faculty advisor system to complement the counseling program. When admitted to the College, the student is assigned a faculty advisor who assists in planning a program of studies which will:

1. Meet the needs of the individual student in his/her chosen course or program,
2. Meet graduation requirements prescribed by the College, and
3. Include the appropriate technical and related education electives in his/her chosen course of study.

While some counseling is available on a drop-in, first come-first served basis, students are encouraged to schedule an appointment with a counselor in the Office of Student Services in advance.

Student Orientation

All new full-time students are required to participate in an orientation program prior to or during the first week of classes. Other students are encouraged to participate in the orientation program. The purpose of the orientation is to assist students in making the transition to the College environment. Topics discussed include student services, business services, instructional programs and College activities, policies and procedures. It also allows for scheduling of tests, interviews, or evaluations which are necessary to enroll students. Advisors are to use the orientation period to determine advanced standing status or program entry level and schedule classes for new students, if not previously done. The orientation program may also include testing, counseling, program advising, financial aid services and social activities.

Testing Services

Ivy Tech offers a variety of tests to assist students with career planning and for program placement. A fee is charged to cover the cost of administering some of the test batteries. Mature adults who have been out of school for some time are encouraged to complete the testing program to assist them in determining their career goals and for planning their course of study.

General Educational Development Test (GED)

The 13 regional institutes of Ivy Tech have been designated as General Educational Development (GED) Testing Centers by the Indiana Department of Public Instruction.

Persons who did not complete high school and who are interested in enrolling at Ivy Tech may arrange to take the GED Test at any of the Centers. Applicants must be a resident of Indiana and 19 years of age. The Indiana Department of Public Instruction or the applicant's high school will issue a diploma to persons who pass all sections of the GED Test. There is a fee for this testing service.

The College also offers special instruction to prepare students for the GED test following admission to the institution. The required curriculum material is part of the skills advancement courses offered in the Learning Resource Center.

Student Placement Services

Ivy Tech offers assistance to all students and alumni interested in obtaining part-time and full-time employment. Students interested in placement assistance should contact the Office of Student Services for the following:

1. Posted job openings for both full and part-time jobs.
2. Occupational and career information.
3. Resumé and transcript services.
4. Local and state job market data.
5. Arranging on and off-campus interviews with employers.
6. Coordination of job openings between students, alumni and faculty.

The College makes every effort to develop and maintain a list of job opportunities in the community. Information on part-time and full-time employment is available in the Office of Student Services.

Registration and Late Registration

Students are expected to register during the period scheduled each quarter for registration; however, a student may register during late registration. The dates for registration and late registration are designated each quarter for returning students and newly entering students. A late registration fee is assessed students who enroll late.

Change of Schedule - Course Add/Drop

Students may add and/or drop courses from their class schedule during the period which begins with registration and ends with the close of late registration. When an add/drop form is processed prior to the end of the late registration period, the enrollment fees will be adjusted as may be appropriate. All course add/drops must be processed through the Office of Student Services.

Financial Aid

Indiana Vocational Technical College offers a variety of financial aid to help students who need assistance to continue their education. Some aid programs are administered by the College Financial Aid Office under the policies and guidelines established by the state and federal governments; other programs are administered by a state or federal agency or an outside organization.

Eligibility for most of the financial aid at Ivy Tech is based upon the demonstrated financial need of the student. In addition, students must also:

1. Be a citizen or national of the United States or be a permanent resident.
2. Be accepted for admission to the College in an eligible program as at least a half-time student.
3. File a financial aid form (FAF) annually.
4. Maintain satisfactory standards of progress.
5. Sign an affidavit of educational purpose.

Grants and Scholarships

Basic Educational Opportunity Grant (BEOG)

This program is the largest Federal student assistance program. The College requires all students seeking aid to apply for a basic grant. As a federal entitlement program, the grant is based on the student's need in relation to the cost of education. Grant amounts may range from \$200 to \$1,800 annually. Since the amount of the grant is related to the cost of attendance, it may vary from quarter to quarter. BEOG applicants receive a Student Eligibility Report (SER) which must be presented to the Financial Aid Office to determine the amount of the BEOG.

Supplemental Educational Opportunity Grant (SEOG)

The SEOG is a federally-funded program designed for students with exceptional financial need. SEOG recipients must also be offered aid from other sources; the grant may not exceed more than one-half the total aid offered. This grant may range from \$200 to \$1,500 per year. The SEOG is usually matched with a BEOG.

Hoosier Scholarships

Ivy Tech students may qualify for State scholarships which are awarded annually on the basis of academic achievement and financial need. Recipients without financial need are named "honorary" Hoosier Scholars and receive no monetary award. Hoosier Scholarships are awarded only to full-time students. The scholarship covers only the general fee, ancillary fee and student activity fee up to 20 credit hours during the Fall, Winter and Spring terms. Eligibility is determined by the Financial Aid Form (FAF) and the Fall Scholastic Aptitude Test (SAT) scores submitted to the State Student Assistance Commission of Indiana. The filing deadline for the Financial Aid Form is February 1. Ivy Tech students who did not apply for a Hoosier Scholarship during their senior year in high school may apply for a second-year award if they have a cumulative Grade Point Index of 3.00 for their first year, and if enrollment on a full-time basis is continued in the second year.

Indiana Educational Grants

The State Grant program is based exclusively on the financial need of the student. The Scholastic Aptitude Test (SAT) is not required, but the Financial Aid Form must be filed by March 1. Like the Hoosier Scholarship, the State Grant covers only the general fee, ancillary fee and student activity fee up to 20 credit hours during the Fall, Winter and Spring terms.

Ivy Tech Scholarships

Many of the regional institutes award scholarships sponsored by local civic and service organizations. Students are advised to contact the Financial Aid Officer for details relating to other scholarships that may be available.

Discretionary Fee Remission

Each region has authorization to grant limited fee remissions to students who have unusual circumstances which create special needs at the time of enrollment. The fee remission is granted on the basis of need and may not exceed the general fee.

Employment and Loans

College Work-Study Program

This federally-funded program provides part-time employment to students with financial need. The Financial Aid Form is required. Job assignments may be within the College or in public non-profit agencies in the community. Students are assigned to jobs by the Financial Aid Officer who takes in consideration class schedules and family and personal obligations in determining the number of hours to be worked each week. The starting hourly rate is the federal minimum wage. Employment may consist of secretarial and clerical office work, Learning Resource Center (LRC) and lab assistants, maintenance, or custodial work. When possible, students are offered Work-Study assignments in areas related to their career objectives.

Indiana Guaranteed Student Loan Program

Students may borrow up to \$2,500 per year while enrolled full-time at Ivy Tech. Many local banks, savings and loan associations, and credit unions lend money to students through the Indiana Guaranteed Loan Program. The loans are interest-free as long as the borrower is enrolled at least on a half-time basis. Repayment of the loan, at 7 percent simple interest, begins after the grace period following graduation or when the student ceases attendance at Ivy Tech. The total aggregate amount borrowed may not exceed \$7,500.

Ivy Tech Foundation Loans

An emergency loan fund is available to assist students with small loans on a short-term basis. The loan must be repaid within 30-60 days. Information on this interest-free emergency loan fund is available from the Financial Aid Officer.

Other Financial Aid

Veterans' Benefits

Students who are veterans of military service may be eligible for benefits. Applications for educational benefits may be obtained from either the Regional Ivy Tech Office of Veterans Affairs or the local Veterans Service officer. Monthly Veterans' Administration (V. A.) benefits may be used at all regional locations of Ivy Tech. Application for these benefits should be made at the regional institute of your choice at the earliest possible date. The College is responsible for reporting attendance for veterans, and continued funding by V. A. is dependent on the veteran making measurable progress toward an educational objective. Each regional campus of Ivy Tech has an individual designated as V. A. Coordinator to handle reporting duties and counseling for veterans.

Children of Veterans are eligible for a waiver of the general fee charged by Ivy Tech if the parent's death or disability occurred as a result of service in the armed forces during war time. A remission of fees letter is required to show eligibility. Children of veterans who are 100% disabled or deceased (service connected) may be eligible for veterans' benefits and should contact the Veterans Administration to confirm eligibility.

Social Security

Monthly Social Security benefits are available to students when one or both parents receive Social Security disability or retirement benefits or when a parent covered by Social Security dies. Educational benefits may be extended to eligible students up to the age of twenty-two. Eligibility is determined by the Social Security Administration. Further information may be obtained from the local Social Security Office.

Vocational Rehabilitation

Students with disabilities which may be considered handicaps to employment may qualify for benefits through the Indiana State Board of Vocational Rehabilitation. Conditions of eligibility are established by the Board and awards based on individual needs are made by the local Department of Vocational Rehabilitation (DVR).

Comprehensive Employment Training Act (CETA)

Assistance in obtaining vocational training may be an option available to students from economically disadvantaged backgrounds under the Comprehensive Employment Training Act of 1973 as amended.

Police and Fireman Orphans

Children of deceased regular-paid law enforcement officers and firemen are eligible for a waiver of the general fee if the parent's death occurred in the line of duty. The fee waiver is granted to only full-time students under the age of 23. Certification from the appropriate agency must be presented to the College to obtain this fee waiver.

Application Procedures

Application forms for all College-administered student aid programs, including the Financial Aid Form (FAF) and instructions, are available in the Financial Aid Office. Since procedures for applying, deadlines, and eligibility regulations vary for the various types of student aid, interested students are encouraged to contact the Financial Aid Office at their earliest convenience.

Student Housing

Most of the students attending Ivy Tech commute daily from their homes. While Ivy Tech does not operate residence halls, assistance is available through the Office of Student Services to students seeking local housing. The College accepts no responsibility for approving or supervising housing that may be obtained.

Bookstore

The College maintains a bookstore in each regional institute to make available textbooks and related supplies needed by students in each of the program areas. In addition, College sweaters, jackets, souvenirs and various sundry items may also be available for purchase.

Student Records

The area of student records includes any phase of each student's record from the beginning admission application through final graduation. The Student Records Office has the responsibility to review transcripts and to coordinate registration, course drops and adds, change of program of study, grade reporting, withdrawals, transcript requests, course audits, etc.

Indiana Vocational Technical College is an educational institution subject to the Family Educational Rights and Privacy Act, more commonly referred to as the Buckley Amendment. The purpose of the Act (Section 438 of the General Education Provisions Act, 20 USC 1232g) is to protect the privacy of students and their parents in regard to access and disclosure of students' records maintained by the College. In compliance with the Buckley Amendment, the College has developed appropriate formal rules and regulations. If students wish to gain access to their records, the regional Office of Student Services will assist them. The College has designated the following personally identifiable student information as directory information:

1. Name.
2. Address.
3. Date and place of birth.
4. Major field of study.
5. Participation in officially recognized activities and sports.
6. Weight and height of members of athletic teams.
7. Dates of attendance.
8. Degrees and awards received.
9. The most recent previous educational institution attended.
10. Other similar information.

This information may be disclosed, as in a graduation program, etc., unless a parent or student refuses to permit the inclusion of a category, or all such information as designated directory information. This refusal must be in writing to the regional institute and describe that information which is to be excluded. The refusal must be made within three weeks after the student begins classes at the College. All notices of refusal and questions on student records should be directed to the regional Student Services Office.

Committee on Student Status

Each region of the College has a Committee on Student Status. The committee is composed of at least two instructional staff members, two students designated by the Student Senate and two administrative persons.

Student Organizations and Activities

Ivy Tech recognizes the educational, recreational and social values of student organizations and a well-integrated program of student activities. The College believes that participation in student activities contributes to the wholesome development of the individual and encourages participation as long as it does not interfere with studies. A large measure of responsibility and leadership for regional affairs is administered through student committees, assisted by the Office of Student Services, faculty and other members of the staff.

All student organizations must operate under the policies and guidelines set by the State Board of Trustees for the College. Approval of the Administration and Student Senate is required of student organizations prior to their making use of College facilities. Membership in all approved organizations must be open to eligible students without regard to sex, race, color, creed or religion, national origin, physical or mental handicap, or age. Student organizations must make available all records of its officers, membership and financial transactions to the Student Senate. Student organizations include, but are not limited to, the Student Senate, intramural sports, class organizations, professional and trade societies, special interest groups and social clubs.

Student Senate

Students in each region are provided opportunities to participate in student government through membership in the Student Senate. The Student Senate is the representative governing body of the

students. Student Senate representatives may be elected to serve one year and may be re-elected to serve one additional year. Only full-time students may serve on the Student Senate.

The student body membership may consist of representatives of the first year class, the second year class, the representative of each program area approved to be offered in the region and faculty advisor.

The functions of the Student Senate include:

1. Communicating bona fide concerns of the student body and suggestions for improvement to appropriate College officials;
2. Approving those student organizations which will be beneficial to student life and worthy of being a part of the College;
3. Assuring that a copy of the Constitution and By-Laws, Statement of Purpose and Objectives of each recognized student organization is on file in the Office of Student Services;
4. Referring of bona fide student grievances of disciplinary matters and student status to the Committee on Student Status, and other bona fide grievances to the appropriate College official;
5. Planning and conducting appropriate extra curricular student activities; and
6. Budgeting of Student Activity Funds for review and approval by the regional administration.

Athletics

While athletic activities vary from region to region, a state-wide intercollegiate basketball program provides opportunities for students to participate in competitive sports funded through the Student Senate. The College's intramural sports may be sponsored by the Student Senate and Leagues may be formed where student interest justifies their organization. The Intramural Sports program may also include softball, volleyball, bowling, and other small team sports offered at some regional campuses.

Class Organizations

Each class, first and second year, may elect a class President, Vice President, Secretary-Treasurer, Class Reporter and the at-large representatives for the Student Senate. Class organizations are to be sponsored by the Student Senate, and their primary purpose is for class-wide social activities and sports functions. The election of class officers will be held

during the first three weeks of each Fall Quarter. Each class organization must have a faculty advisor appointed by the College.

Professional and Trade Societies

Student chapters of the various societies may be formed on the same basis and under the same requirements as other student organizations.

Social Activities

All group activities of the College must be sponsored by the Student Senate and approved by the Administration. Classes, clubs and other groups plan and conduct social activities for their members, while the Student Senate organizes and conducts social activities and events for the entire College community.

Clubs

Hobby, social or special interest clubs may be organized but must be chartered by the Student Senate and have the approval of the Administration. They should have the following elected officers: President, Vice President, and Secretary-Treasurer. All clubs must have a faculty advisor. The Student Senate must determine if sufficient interest exists to form or continue a club.

Conduct

College students are considered to be mature and their conduct both in school and out is expected to be dignified and honorable.

Students are living in a democratic situation where the reputation of the College to a great extent rests with them. Common courtesy and cooperation are expected at all times.

Theft - Vandalism

All incidents involving thefts or vandalism are to be reported to the Office of Student Services. The College is not responsible for the loss of personal property.



TUITION AND FEES

The goal of Indiana Vocational Technical College is to provide quality training to residents at the lowest possible cost; therefore, no tuition is charged students who are residents of the State of Indiana. Students enrolled in regular courses are required to pay tuition and fees as follows:

Credit Course Tuition and Fees Per Credit

Type of Fee	Indiana Resident	Non-Resident/ International Student
General Fee	\$12.00	\$12.00
Out-of-State Tuition		\$12.00
Ancillary Fee	\$ 2.25	\$ 2.25
Student Activity Fee* (Maximum Charge)	\$.35	\$.35
TOTAL FEES	\$14.60	\$26.60

*Maximum fee—this fee is established by the Regional Board of Trustees and may include the Student Accident Insurance Fee.

All tuition and fees are subject to change by action of the Indiana Vocational Technical College State Board of Trustees.

Fees and Descriptions

General Fee

A General Fee of \$12.00 per credit is assessed all students to help support the College's operations and is refundable.

Out-of-State Tuition

Students not meeting the College's requirements for residency are assessed a Tuition Fee of \$12.00 per credit in addition to the General Fee and is refundable.

Ancillary Fee

An Ancillary Fee of \$2.25 per credit is assessed each student to cover the cost of state-wide facilities development. Refundable in accordance with the refund schedule of fees for credit courses.

Student Activity Fee

The actual Student Activity Fee for each regional institute is established by its Regional Board of Trustees and may include the Student Accident Insurance Fee. The Student Activity Fee cannot exceed a maximum of \$.35 per credit. Refundable in accordance with the refund schedule of fees for credit courses.

Student Accident Insurance Fee

Each student enrolled in the College is required to purchase student accident insurance each quarter. If the student is full-time (12 or more credits), the

assessment is \$.55 and if a part-time student (less than 12 credits), the assessment is \$.25. This fee will be refunded if the student officially withdraws from the College prior to the official enrollment count.

Student Liability Insurance (Malpractice)

Students who enroll in health occupation courses, and who, as part of their studies are required to have clinical experience in an agency other than facilities of the College, are required to purchase malpractice insurance at the cost of \$4.00 per quarter before being permitted to enter into the clinical phase of their instruction. This fee will be refunded if the student officially withdraws from the College prior to the official enrollment count.

Late Registration Fee

A \$5.00 fee is assessed students who enroll after the designated regular registration period each quarter. This fee is non-refundable.

Graduation Fee

A \$10.00 Graduation Fee is assessed students applying for graduation. This fee is to cover costs incurred in processing graduation diplomas and preparing for the commencement ceremony, but does not include the cost of cap and gown. This fee is assessed at the beginning of the final quarter and is non-refundable.

Parking Fee

The College attempts to provide adequate off-street parking for students who commute by automobile. A Parking Fee of \$2.00 to \$5.00 may be assessed students and staff who use College parking facilities to provide off-street parking, related security and maintenance. The amount of the fee will be announced by the regional institute and is non-refundable.

Course Audit Fee

Students enrolling in regular College credit courses on an "Audit" basis are assessed the same fees as credit students.

Laboratory/Shop Fees

Students are assessed laboratory and/or shop fees for certain courses to cover the cost of consumable supplies and materials, and is refundable.

Books

All students are expected to purchase text books required for each course. The cost of books will vary depending on the program and is estimated to be \$40.00 to \$50.00 per quarter.

Tools

The College furnishes major equipment items for instruction; however, in many programs or courses, students must furnish additional tools and equipment.

Uniforms and Other Special Equipment

Several programs require students to furnish uniforms, special clothing, or equipment for participation in the laboratory areas.

Payment of Tuition Fees

Students are expected to pay all fees at the time of registration. A deferment of fees may be granted in certain cases if arrangements are made prior to registration. Procedures for fee deferment are available through the Office of Student Services.

Refund of Fees

Students who are enrolled in credit courses and withdraw from College may be eligible to receive a refund for a portion or all of the tuition and fees paid during registration. The effective date for calculating the refund is the date a student submits *written* notification for official withdrawal to the Office of Student Services. Should courses be cancelled by action of the College, a refund will be made of all fees. Students who withdraw from the College are governed by the following refund policies:

1. *Prior to first day of class* - The College will refund 100% of all refundable fees paid if written notification of withdrawal from the course(s) is submitted prior to the first day of class(es).
2. *First week of class* - The College will retain ten dollars (\$10.00) and refund all other refundable fees paid if written notification of withdrawal from the course(s) is submitted prior to the end of the first week of class(es).
3. *Second week of class* - The College will retain fifty percent (50%) of credit course fees assessed or a minimum of ten dollars (\$10.00) whichever is larger, and refund the balance of refundable fees paid if written notification of withdrawal from the course(s) is submitted prior to the end of the second week of class(es).
4. Thereafter, no refunds will be made.

Regional institutes which have *not* achieved accreditation will apply the refund policy applicable to veterans, war orphans, wives and widowed students which is in accordance with Section 1776 (c) (13); Title 38, U.S. Code. That is, a refund will be made of the unused portion of tuition, fees, and other charges to veterans or eligible persons who fail to enter or fail to complete the course as required by Veterans Administration Regulations. The refund will be within ten percent (10%) of the exact pro rata refund. No more than ten dollars (\$10.00) of the established registration fee will be retained if a veteran or eligible person fails to enter the course. Regional offices of Student Services will assist with forms and procedures.



INSTRUCTIONAL SERVICES

The Curricula

Ivy Tech offers a wide variety of occupational learning opportunities for persons seeking job entry, job advancement, and/or a career change. These learning opportunities may include more than 30 courses and require up to two years of full-time study to complete; or, they may consist of only a few courses and require one term to complete.

The College offers three program levels: the Degree of Associate in Applied Science, the Technical Certificate and the Occupational Certificate.

Students can begin training at their present skill level and progress as far as they desire in meeting their career goals. To achieve this career ladder concept, entering students are encouraged to have their competencies assessed prior to enrollment. Through counseling and testing, students can be placed in courses consistent with their capabilities and career objectives.

The curricular structure for each program allows for course selections and options to meet student needs. For the purpose of individualizing instruction, some courses may be offered as a series of modules. In other cases, the related courses can be combined to maximize the impact of the training. Regional options provide for local variation to meet the employment needs of the local community. Variations may occur at regional institutes of the College in courses that comprise a curriculum and the number of credits awarded for a particular course. When such variations do occur, the regionally approved curriculum is accepted as the requirement for graduation.

The faculty advisor will determine the appropriate course sequence and must approve all courses designed to fulfill degree or certificate requirements. More advanced courses may have one or more prerequisites.

In today's fast-paced technological society, change is the rule rather than the exception. Career fields, processes, and techniques are constantly evolving and expanding. Consequently, an institution committed to career development and occupational training as its primary goal cannot remain static in its programs or course content. Ivy Tech continually assesses and up-dates its programs to meet the ever-changing needs of Indiana's employees and citizens.

Practicum Courses

The instructional programs or curricula outlines of the College may include one or more 1-credit, 2 contact hour practicum courses. Practicum courses are supplemental in nature and aligned to a particular course contained in a regular instructional program.

These courses are assigned a unique course number and list the course title it is augmenting plus the word practicum. They are designed to enhance the learning process by providing additional supervised "hands on" experiences. A grade is assigned and is computed in the student's Grade Point Index (GPI).

Learning Resource Center

An important factor in successful career training is recognizing each student as an individual with unequal learning requirements. For this reason, the Learning Resource Center (LRC) in each region provides one of the College's most important services. It is in this low-pressure learning environment that students can progress at their own pace and find personal satisfaction. Students work with tapes, workbooks, slides, models, and other media on an individual basis, repeating work as often as necessary to reach an appropriate level of understanding. A member of the College staff is available for assistance and evaluation.

The LRC is available primarily for instruction in such basic subjects as communications, reading improvement, mathematics and writing.

Skills advancement or learning skills courses are also offered at the Center. These courses feature traditional and self-paced instruction in mathematical and communication skills, shop processes, and science with supplementary material oriented toward specific occupations. All skills advancement instruction is designed so that students can begin at their present level and advance to their objectives as rapidly as they choose. While credits will be granted for completion of these courses, the courses do not count in meeting graduation requirements.

Pre-technical courses may also be offered in the Learning Resource Center or as traditional courses. These courses are other than skills advancement, and may assist the student in satisfying requirements for entry into a selected program.

Enrollment Status

A student will be considered to be a full-time student when carrying 12 or more credits. The following table reflects the accepted enrollment status required for financial aid eligibility and standards of progress:

Enrollment Status	Credit Hour Intervals	Minimum Credits Which Must Be Completed
Full Time	12 + Credits	12 Credits
3/4 Time	9-11 Credits	9 Credits
1/2 Time	6-8 Credits	6 Credits
Less than 1/2 Time	1-5 Credits	Not Applicable (NA)

Grades and Status

Grades reflect the quality of performance and level of competency by students who complete a course. Status is a condition for which no quality points are assigned. Instructors are responsible to determine and assign both grades and status based on objective appraisal and evaluation of students' performances.

Grades and status assignments are summarized, reviewed and analyzed at the course, program, division, region and college-wide levels. An intermediate status must be converted to a grade within a specified time period. Quality points are not applicable and are not computed for any status condition.

<u>Grades</u>	<u>Interpretation</u>	<u>Quality Points Per Credit</u>
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Unsatisfactory	0

<u>Status</u>	<u>Interpretation</u>	<u>Quality Points Per Credit</u>
IP	In Progress	Not Computed
I	Incomplete	Not Computed
W	Withdrawal	Not Computed
AU	Audit	Not Computed
S	Satisfactory	Not Computed

IP In Progress:

This intermediate status is applicable *only* to courses that are entirely individualized or to courses open to enrollment anytime during a given quarter. Students can be assigned an IP status when, at the end of any College quarter, they have not completed such courses and will continue course work into the next quarter. Such course work should be completed with a grade awarded within a time span comparable to that for regularly scheduled College activity unless otherwise authorized by the Director of Instruction. Care should be exercised to avoid a work overload in the subsequent quarter or jeopardizing financial aid.

I Incomplete:

This intermediate status is assigned only when students: 1) have not completed final examinations; or, 2) have not completed certain other course requirements and arrangements have been made with the instructor to complete the unfinished work. Each instructor is responsible for assigning the time period in which the final test or course work is to be completed. This should not exceed thirty days following the end of the quarter for which the incomplete status was assigned unless authorized *in writing* by the Director of Instruction. Students who

do not make such arrangements will be assigned a grade (A, B, C, D, F) appropriate to the work partially completed.

W Withdrawal:

Withdrawal is a terminal status. Students can voluntarily withdraw from courses (following the end of the fee refund period) up to the end of the sixth week without the instructor's approval. Thereafter, the instructor's approval is required. A student will not be permitted to withdraw from a course after completion of all course work, including a final examination. Should an instructor refuse to approve a request for voluntary withdrawal, the student will be assigned a grade commensurate with the course work accomplished. Instructors, with approval of their Director of Instruction, can withdraw students for excessive absence or under extenuating circumstances such as an accident. Students will be notified prior to such action.

AU Audit:

Students enrolling in courses for "audit" will pay the same fees as students enrolled for credit. An audit carries no grades or credit.

S Satisfactory:

Credit for courses may be granted on the basis of examination and/or evaluation of work experience and previous education.

Grade Reports

Grade reports are issued to students at the end of the term and posted on their official College transcript.

Grade Improvement

For the purpose of grade improvement, a student may, with the approval of his advisor, re-enroll in a course for which a passing or failing grade has been awarded. In such cases, only the higher grade will be counted in computing the grade point index. Financial aid recipients should consult with the appropriate College official since payment for repeated courses may be disallowed.

Cumulative Grade Point Index (GPI)

A student's cumulative grade point index is the quotient obtained by dividing the total number of quality points by the total number of credits attempted. The cumulative grade point index is computed at the end of each term and is reported to the student. The GPI reflects only courses that contribute to the student's educational objective.

Standards of Progress

A student is considered to be in satisfactory progress when maintaining a minimum cumulative grade point index of 2.0. This index is calculated on

the basis of the courses which contribute to the requirements of the approved certificate degree program the student is currently pursuing. Students taking prescribed developmental courses supporting the educational/career objectives must also maintain a 2.0 GPI in these courses.

Students qualify for graduation when all course requirements for the approved certificate or degree program have been completed and the cumulative grade point average is at least 2.0.

Academic Probation can result in:

1. Required attendance at special counseling sessions.
2. Required remedial courses.
3. Limited or reduced course load.
4. Exclusion from further registration for one quarter based on the recommendation of the faculty advisor and student status committee with approval of the Vice President/Dean.
5. Reduction or disqualification for continued financial assistance based upon entitlement requirements specified by the agency providing the financial assistance.
6. Disqualification for graduation.

Students are removed from probation when satisfactory progress is reestablished, i.e., a cumulative grade point index of 2.0, or upon approval of the Vice President/Dean.

Attendance

Regular attendance at scheduled class meetings or other activities assigned as part of a course of instruction is expected. Accordingly, instructors are responsible to maintain attendance records.

Occasionally personal circumstances may arise which render it impossible for students to attend scheduled classes and activities. Whenever such circumstances can be anticipated, the College expects students to confer with instructors. Such advance notification provides the opportunity for instructors to offer the students the option of making up the missed material. In cases of unforeseen circumstances, students should consult with their instructors to arrange for make-up. Absences will be considered by instructors in awarding grades as is appropriate to each course.

When a student is absent from scheduled class meetings or activities a sufficient number of times to put successful course completion in jeopardy, the instructor will notify Student Services. Student Services will make a reasonable effort to determine whether the student intends to return to class. For students who apparently intend not to return to class, the Director of Student Services, after following appropriate student notice requirements, is to consider said student as making unsatisfactory progress. Therefore, Student Services is authorized to

withdraw the student from class.

Dean's List

The Dean's List is prepared and published each quarter giving recognition to students who have achieved a 3.50 Grade Point Index or higher while enrolled for 12 credits or more during the quarter.

Graduation Requirements

The College awards the degree of Associate in Applied Science or the appropriate certificate to students who meet its graduation requirements. Graduation ceremonies are held at least once a year. A fee is charged for all students applying for graduation and is non-refundable.

To graduate with an Associate in Applied Science Degree, students must:

1. Complete an approved curriculum and
 - a. be a high school graduate, or
 - b. have successfully completed the high school equivalency (GED) examination.
2. Complete all course work and receive a computable grade.
3. Earn a minimum of 90 degree credits, the last 15 of which must be earned at the College. These 15 credits must be earned as a regular student rather than test-out or other means of advanced placement.
4. Satisfy all financial obligations due the College.
5. File a notice of intent to graduate with the regional Office of Student Services at the beginning of the final quarter preceding graduation.
6. Have a minimum cumulative grade point index of 2.0 for the courses which contribute to the requirements of the degree.

To graduate with a Technical Certificate, students must:

1. Satisfactorily complete all course work and receive a terminal grade.
2. Earn a minimum of 45 degree credits, the last 9 of which must be earned at the College. These 9 credits must be earned as a regular student rather than test-out or other means of advanced placement.
3. Complete an approved curriculum.
4. Satisfy all financial obligations due the College.
5. File a notice of intent to graduate with the regional Office of Student Services at the beginning of the final quarter preceding graduation.
6. Have a minimum cumulative Grade Point Index of 2.0 for the courses which contribute to the requirements of the certificate.

To graduate with an Occupational Certificate, students must:

1. Satisfactorily complete all course work and receive a terminal grade.
2. Earn a minimum of 15 degree credits, the last 9 of which must be earned at the College. These 9 credits must be earned as a regular student rather than test-out or other means of advanced placement.
3. Complete an approved curriculum.
4. Satisfy all financial obligations due the College.
5. File a notice of intent to graduate with the regional Office of Student Services at the beginning of the final quarter preceding graduation.
6. Have a minimum cumulative grade point index of 2.0 for the courses which contribute to requirements of the certificate.

The College also awards a Certificate of Completion to recognize the successful completion of one or more credit or non-credit courses or other educational activity.



Informational Activities (Community Services)

The educational program offered by Ivy Tech also includes workshops, seminars, conferences, non-credit courses, and other short-term training opportunities. These offerings are designed to meet the special occupational needs of individuals and employers without concern for College credit.

Through the Community Services program, the Col-

lege goes beyond the traditional classroom with out-of-the-ordinary offerings planned around the special interests of individuals and groups within the region. Participants do not receive course grades nor is College credit awarded. However, a Certificate of Completion may be awarded.

Informational and Community Services activities are identified and designed to respond to the specific and sometimes unique needs of each region.

PROGRAM AND COURSE LOCATOR CHART

- = Approved Programs
- = Planned Programs
- = Courses Only
- = Courses Only & Planned Programs

Programs and Courses	1	2	3	4	5	6	7	8	9	10	11	12	13
BUSINESS SCIENCE DIVISION													
Accounting	●	●	●	●	●	●	●	●	○	●	●	●	●
Bookkeeper Option													0
Business Machines Option	●						●			0		0	
Computer Programming	●	●	●	0	●	●	●	●	●	●	●	●	■
Court Reporting	●												
Credit & Finance	□		□	□			●	0		□			
Culinary Arts Option to Hotel-Motel Mgt.							●						□
Data Entry Option	0	●	●							0			
Industrial Health & Safety													●
Hotel-Motel Management							●			□		□	■
Industrial Management	●	●	●	●	●	■	●	■	●	■	●	●	□
Marketing	●	□	●	●	●	□	●	●	●	□	□	●	□
Quality Control				0			●		●				●
Secretarial-Administrative	●	●	●	●	●	●	●	●	●	●	●	●	●
Secretarial-Legal		□	●	●	●	●	●	●	□	●	●	●	●
Secretarial-Medical	□	□	●	●	●	●	●	●	●	●	●	●	●
Small Enterprise/Office Operations	□	●	●	●	0	●	0	●	●	●	●	●	●
Stenographer-Typist Option													●
Word Processing Option	●												
GRAPHICS & MEDIA DIVISION													
Audio Visual Communications	●							□		□			0
Commercial & Industrial Photography	□	●			□	●	●			●	□	●	●
Commercial Art	□	●			■			□	□	●		●	●
Interior Design		●		□	●	●	□	■		●		●	●
Library Resource Aide				●				●					
Printing							●			●			
HEALTH OCCUPATIONS DIVISION													
Child Care	●		●			●	□		■	□			■
Culinary Arts Careers			●										
Dental Assistant				●	●	0							
Dietary Assistant	●	●	●	□	□			0					
Emergency Medical Technician-Level II	●												
Emergency Medical Technician-Ambulance	●	●	●	●	●	●	●	●	●	●			●

Chart is continued on next page

PROGRAM AND COURSE LOCATOR CHART (continued)

- = Approved Programs
- 0 = Planned Programs
- = Courses Only
- = Courses Only & Planned Programs

Programs and Courses	1	2	3	4	5	6	7	8	9	10	11	12	13
HEALTH OCCUPATIONS DIVISION - continued													
Human Services								●					
Medical Assistant	●	●	●	●	●	●	●	●	■	●	●	●	●
Medical Laboratory Technician	●		●				●	●	●	●			
Medical Records					●								
Mental Health Rehabilitation		●			●			■	0				
Nurses Aide/Home Health Care						□		■					
Practical Nursing	●	●	0	●	0		●	●	●	●			●
Radiologic Technology				0			●	●					
Respiratory Therapy	●	●	●	●			●	●		●	0		
Surgical Technician	●	●		●			●						●
Unit Secretary/Ward Clerk							□						
TRADE & TECHNICAL DIVISION													
Agricultural Equipment	□	●	●	●		●	0	●		□			
Appliance Repair Option						□	□	■					
Applied Fire Science	●	●	□	□			□				●	□	
Architectural Drafting	□	●	●	●	●	□	●	●	□	●	□	●	●
Auto Body Repair	●	□	●	●	●	●	●	●		●		●	
Automotive Mechanic Option												●	
Automotive Service	●	●	●	●	●	●	●	●	●	●	●	●	●
Biomedical Electronics							●						
Building Construction	□	□	●	●	●	●	●	□	●	●	●	□	●
Cable TV Installer/Technician							0		●				
Diesel Option to Automotive Service	□		0				□			●			
Diesel Power	□	●					0			□			●
Electronics Communications	●	●	●	□	●	●	●	●	●	0	●	●	●
Electronics Technology	●	●	●	●	●	●	●	●	●	●	●	0	●
Heating, Air Conditioning & Refrigeration	●	●	●	●	●	●	●	●	●	●	●	●	●
Industrial Drafting	●	●	●	●	●	●	●	□	●	●	●	●	●
Industrial Maintenance	●	0	●	●	□	●	●	●	●	■	■	●	●
Machine Tool	■	●	●	●	●	●	●	●	●	●	■	□	
Plastics Manufacturing	0												
Pollution Treatment	●	□	●	□	□	●	●	●	□	□	□	●	●
Security & Loss Prevention	■	□	□						□				
Small Engine Repair								■					
Surface Mining Operation								●					
Voc/Tech Work Experience Education				0			0						
Welding	●	●	●	●	●	●	●	●	●	●	●	●	●

Variations may occur at regional institutes of the College in courses that comprise a curriculum and the number of credits awarded for a particular course. When such variations do occur, the regionally approved curriculum is accepted as the requirement for graduation.

INSTRUCTIONAL PROGRAMS

Business Sciences Division



ACCOUNTING

Careers

Accounting is a means of expressing in financial terms the results of the operations which take place in business, government, and other organizations. Accountants must effectively measure and communicate data reflecting the efficiency level of human, financial, and material resource utilization.

The accounting office activity is generally performed in the financial division of businesses and organizations. Demand for accounting workers is particularly strong in banks, insurance companies, manufacturing firms, government offices, and professional service organizations. Entry level positions in the accounting field include accounting clerk, accounting machine operator, general office clerk, bank teller and many others. After gaining experience and additional training, advancement to accountant, cost accountant or private practice is possible.

Ivy Tech's Program

The Accounting program provides instruction for entry level employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree. Additionally, an option in Credit and Finance permits interested students to specialize in this area.

The program includes courses in the following areas: accounting principles, cost accounting, tax accounting, business law, communications and office calculating machines. The courses are in various formats such as group or individual instruction and laboratory practice. The program may also provide for on-the-job training through which the student gains actual work experience.

Program Levels

- Occupational Certificate: a minimum of 15 credits
- Technical Certificate: a minimum of 45 credits
- Associate in Applied Science:
 - Accounting - a minimum of 94 credits
 - Credit and Finance - a minimum of 95 credits

Accounting



Accounting

Required Technical Courses (49 credits): Credits

0110	Accounting Principles I	4
0120	Accounting Principles II	4
0122	Business Law I	3
0130	Accounting Principles III	4
0140	Intermediate Accounting I	4
0141	Individual Income Taxes	4
0142	Job Order Cost Accounting	4
0143	Business Law II	3
0150	Intermediate Accounting II	4
0151	Process Cost Accounting	4
0152	Business Income Tax or Payroll Accounting	4
0157	Intermediate Accounting III	4
0160	Money and Banking or Microeconomics	3

Required Related Courses (30 credits):

1236	Office Calculating Machines I	3
8110	Communications	4
8111	Business Communications	4

Accounting - continued

8113	Oral Communications	4
8212	Business Mathematics	4
8213	Mathematics of Finance I	4
8401	Human Relations or	
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	3
Elective Courses (14 credits required):		
0165	Budgeting	3
0157	Payroll Accounting	4
0323	Business Principles and Organization	3
0510	Fundamentals of Data Processing	5
1114	Marketing I	4
1212	Typewriting I	4
1222	Typewriting II	4
8406	Employment Orientation	2
Practicum:		
0131	Accounting III-Practicum	1
Total Required:		94
		credits

Electives from the Business Science Division, approved by the advisor.

Accounting-Credit and Finance Option**Accounting****Accounting - Credit and Finance Option**

Required Technical Courses (62 credits):		Credits
0110	Accounting Principles I	4
0120	Accounting Principles II	4
0122	Business Law I	3
0124	Consumer Economics	3
0130	Accounting Principles III	4
0141	Individual Income Taxes	4
0143	Business Law II	3
0152	Business Income Tax	4
0153	Microeconomics	3
0165	Budgeting	3
0166	Introduction to Management	3
0171	Principles of Finance I	3
0172	Principles of Finance II	3
0173	Consumer Credit	3
0174	Credit Procedures	3
0175	Credit Management I	3
0176	Credit Management II	3
0177	Commercial Credit	3
0178	Credit and Collections	3

Required Related Courses (32 credits):

0323	Business Principles and Organization	3
0510	Fundamentals of Data Processing	5
1212	Typewriting I	4
8111	Business Communications	4
8113	Oral Communications	4
8210	Statistics	3
8213	Mathematics of Finance I	4
8401	Human Relations	4
8501	Field Study/Co-op Ed	1-6

Practicum

0131	Accounting III - Practicum	1
Total Required:		95

credits**Computer Programming****Careers**

Computer Programming technicians operate computer consoles and related equipment, design and write computer programs, and analyze and interpret the machine's output. Computer programming takes place in nearly all facets of business, industry and government.

Demand for programmers and computer operators is particularly high in areas such as banking, insurance, hospitals, manufacturing and distributing firms, transportation organizations and government. Entry level positions include programmer, data processing control clerk, computer operator and many others. Advancement to system analyst or administrative positions is possible after further training and experience.

Ivy Tech's Program

The Computer Programming curriculum provides an integrated study of the theory and practice of computer programming for business, industry and other institutional use. The College offers a variety of courses, and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The curriculum includes courses in the following areas: COBOL programming, business principles, communications, computer operations, problem solving, systems analysis and design, accounting and statistics. The courses are presented in various formats such as group or individual instruction and laboratory practice. The curriculum may also provide for a field study.

Programs Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 100 credits

Computer Programming



Computer Programming

Required Technical Courses (41 credits): Credits

0510	Fundamentals of Data Processing	5
0520	COBOL Programming Fundamentals	5

0521	Practical Computer Operations	5
0522	Problem Solving Fundamentals	3
0530	Advanced COBOL Programming	5
0531	Operating Systems	5
0540	Systems Analysis and Design	4
0551	Business Programming Applications	5
0560	Data Communications	4

Required Related Courses (41 credits):

0110	Accounting Principles I	4
0120	Accounting Principles II	4
1112	Introduction to Business <u>or</u>	4
0323	<i>Business Principles and Organization</i>	3
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8203	Technical Mathematics I	4
8210	Statistics	3
8401	Human Relations	4
8501	Field Study/Co-op Ed	6

Electives (18 credits):

0130	Accounting Principles III	4
0511	Fundamentals of Programming	5
0512	BASIC Programming	5
0532	Job Control Language	4
0541	COBOL Programming III	5
0568	BASIC Language Programming	4
0570	Assembler Language Fundamentals	5
0572	FORTRAN 4 Programming Fundamentals	5
0573	RPG-2 Programming Fundamentals	5
0575	Topics in Data Processing I	5
0576	Advanced Assembler Language	5
0577	Topics in Data Processing II Mathematics Electives	5

Total Required: 100 credits

Court Reporting

Careers

Court reporting is an honored profession with excellent employment opportunities for both men and women. The growth of our court system, governmental agencies and the expansion in business and commercial activities has resulted in an every-increasing demand for the shorthand court reporter which far exceeds the number of entrants into this profession. Court reporters are usually employed as the official recorder of the proceedings in a court, in a hearing room, in state or federal legislatures, or self-employed as in the case of free-lance court reporter.

Court Reporting - continued

Ivy Tech's Program

This program offers a firm foundation in business law, legal and medical terminology, and physiology and anatomy. The subject areas of English, typing, machine shorthand, and judicial procedures are emphasized. In addition, each student will receive instruction in general office practices, preparation of transcripts, dictation of notes, indexing and filing of notes, marking of exhibits, use of reference material, and ethics of the court reporting profession.

The National Shorthand Reporters Association has devised specific guidelines for courses, and specific goals and objectives for the graduating court reporter. In order to achieve these goals and objectives, Indiana Vocational Technical College has deemed it necessary to state the following requirements for admission to the Court Reporting program:

1. High School diploma or G.E.D. equivalent.
2. Comparative Guidance and Placement Test — the percentile rating must be above the 50 percentile mark.
3. A passing grade on a visual and oral phonics discrimination test, administered by the division chairperson or department head.
4. An acceptable evaluation of an interview conducted by the division chairperson or department head where the prospective motivation and attitude are rated.
5. A minimum typing speed of 30 words per minute. However, students who have not had typing will not be automatically rejected if all other results are acceptable.

Upon successful completion of this eight quarter program, the student will receive an Associate in Applied Science degree in Court Reporting. The student will also be eligible to apply for and take the National Shorthand Reporters Association examination which is required for certification. At this time, the student must be able to write 225 words per minute on unfamiliar material with at least 95 percent accuracy. The exit-level criteria for this program is a minimum typing speed of 70 words per minute, and a minimum machine shorthand speed of 225 words per minute testimony, 200 words per minute legal opinion/jury charge, and 180 words per minute literary with a minimum of 95 percent accuracy. If unable to meet the minimum machine shorthand dictation requirement of 120 words per minute by the end of the fourth quarter, the student will be eligible for a technical certificate in the Secretarial Administrative program.

Program Levels

Technical Certificate:

(Secretarial-Administrative) a minimum of 45 credits

Associate in Applied Science:

(Court Reporting) a minimum of 126 credits

Court Reporting



Court Reporting

Required Technical Courses (92 credits): Credits

0412	Vocabulary Building	3
0421	Machine Shorthand I (section 71)	4
0431	Machine Shorthand II	5
0432	Speed Building I	1
0433	Dictation-Literary I	2
0434	Dictation-Jury Charge I	1
0441	Speed Building II	1
0442	Dictation-Literary II/Medical I	2
0443	Dictation-Q & A I	3
0444	Dictation-Jury Charge II	1
0451	Dictation-Q & A II	2
0452	Speed Building III	1
0453	Medical Terminology	4
0454	Dictation-Literary III/Medical II	2
0455	Dictation-Jury Charge III	2
0460	Dictation-Q & A III	2
0461	Transcription I	2
0462	Courtroom Punctuation I	4
0463	Speed Building IV	1
0464	Transcription II	2
0465	Business Communications II	4

0466	Dictation-Jury Charge IV/ Legal Opinion I	1
0467	Dictation-Literary IV/Medical III	2
0470	Dictation-Q & A IV	2
0471	Transcription III	3
0472	Courtroom Punctuation II	4
0473	Speed Building V	1
0474	Transcription IV	3
0475	Courtroom Procedures	2
0476	Dictation-Q & A V	3
0477	Dictation-Literary V	1
0478	Dictation-Medical IV/Jury V	1
0479	Dictation IV/Voice Q & A	1
0481	Transcription V	3
0482	Speed Building VI	1
0483	Transcription VI	3
0484	Dictation-Q & A VI	3
0485	Dictation-Medical VI/Literary VI	2
0486	Dictation-Jury Charge VI	2

cupational Certificate, Technical Certificate or Associate in Applied Science degree.

The program includes courses in the following areas: hospitality management, hotel-motel maintenance, supervisory housekeeping, purchasing, business law, business mathematics, sales promotion and communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Technical Certificate in Culinary Arts Option:
a minimum of 72 credits

Associate in Applied Science:
a minimum of 94 credits

Hotel-Motel Management



Required Related Courses (34 credits):

0110	Accounting Principles I	4
0122	Business Law I	3
1212	Typewriting I	4
1222	Typewriting II	4
1310	Legal Terminology	2
1321	Legal Office Procedures	4
8111	Business Communications	4
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	4-5
9353	Anatomy and Physiology I	4
	Total Required:	126
	credits	

Hotel-Motel Management

Careers

Hotel-Motel Management involves the effective operation of these establishments profitably while satisfying the guests. Management workers determine room rates and credit policies, direct the operation of the kitchen and dining rooms, and manage the housekeeping, accounting and maintenance departments of the hotel. These workers are also responsible for solving problems that can arise.

Demand for hotel-motel management workers is increasing each year. Entry level positions may include manager trainee, catering manager, sales representative or purchasing agent. Further training and experience are usually needed for advancement to assistant manager, sales manager, general manager or to self employment.

Ivy Tech's Program

Ivy Tech's Hotel-Motel Management program provides instruction for initial employment or skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Oc-

Hotel-Motel Management

Required Technical Courses (34 credits): Credits

0711	Introduction to Hospitality Management	4
0712	Front Office Procedures	4
0733	Food-Beverage Management and Service	4
0742	Food-Beverage Purchasing and Control	4
0744	Sanitation	4
0752	Sales Promotion	4
0760	Hotel-Motel Maintenance I	3
0762	Supervisory Housekeeping	4
0763	Hotel-Motel Maintenance II	3

Hotel-Motel Management - continued**Required Related Courses (52 credits):**

0110	Accounting Principles I	4
0120	Accounting Principles II	4
0328	Laws Applied to Business	4
0913	Techniques of Supervision I	3
0923	Techniques of Supervision II	3
1112	Introduction to Business	4
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8212	Business Mathematics	4
8213	Mathematics of Finance I	4
8401	Human Relations or Applied Psychology	4
8402	Field Study/Co-op Ed	6

Required Related Courses (15 credits):

8110	Communications	4
8113	Oral Communications	4
8213	Mathematics of Finance I	3
8401	Human Relations	4

Electives (total of 4 credits):		
0710	General Food Theory I	4
0729	Restaurant Operations	4
0730	General Food Theory II	4
0731	Basic Cooking Methods	4
0742	Food and Beverage Purchasing and Control	4
0799	Waitress-Waiter Training	2

Total Required: **72**
credits

**Electives (minimum of 8 credits required):
(minimum of 8 credits required):**

0722	Apartment Management and Leasing	3
0723	Convention Management	3
0724	Financial Management and Control	4
0725	Institutional Management	3
0726	Property Management	3
0727	Tourism	3
2022	Fundamentals of Interior Design I	3
8114	Technical Reporting	3
8118	Effective Reading	2

Total Required: **94**
credits

Industrial Management**Careers**

Industrial managers are found at all levels of business, industry, government, and service industries. These workers assist in such areas as production supervision, operations, planning, quality control, safety, and personnel management. Industrial managers are needed who are skilled in communications, motivational leadership, production techniques, and supervisory techniques. Career opportunities for persons with creative management skills and who are well-trained in industrial supervision are expected to grow steadily. This growth should occur during the next few years with the expansion of manufacturing and production technology requiring more skilled labor. However, competition will continue to be keen.

Ivy Tech's Program

The industrial management program is designed to prepare students for entry-level positions as manager trainees, departmental assistants, and personnel assistants. Graduates are trained to respond to supervisory problems, communicate effectively, and demonstrate their ability to evaluate, analyze, and apply the principles of management in an industrial setting.

The curriculum includes courses in supervision, communications, accounting, mathematics, labor relations, production planning and control, and organization.

Program Levels

Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 45 credits
Associate in Applied Science: a minimum of 92 credits

Hotel-Motel Management - Culinary Arts Option**Required Technical Courses (53 credits): Credits**

0713	Introduction to Volume Food Preparation	5
0714	Introduction to Volume Food Service	3
0715	Co-operative Education I	12
0734	Nutrition	4
0735	Volume Food Preparation	5
0736	Volume Food Service	3
0740	Co-operative Education II	12
0754	Food and Beverage Management and Services	3
0755	Food Production Principles	3
0756	Food and Beverage Purchasing and Services	3

Industrial Management



Industrial Management

Required Technical Courses (21 credits): Credits

0913	Techniques of Supervision I	3
0921	Principles of Industrial Safety	3
0923	Techniques of Supervision II	3
0940	Quality Control	3
0941	Labor Relations	3
0951	Production Planning and Control	3
0960	Economics of Industry	3

Required Related Courses (32 credits):

0110	Accounting Principles I or	
0112	Accounting for Non-Majors	4
0328	Laws Applied to Business or	4
0122	Business Law I	3
0571	Survey of Business Data Processing	3
8110	Communications	4
8113	Oral Communications	4
8114	Technical Reporting	3
8203	Technical Mathematics I	4
8210	Statistics	3
8401	Human Relations or	
8402	Applied Psychology	4

Electives (39 credits):

0143	Business Law II	3
0153	Microeconomics	3
0154	Macroeconomics	3
0912	Manufacturing Organization I	3
0925	Manufacturing Organization II	3

0931	Time and Motion Study	3
0932	Safety Regulations	3
0942	Purchasing and Inventory Control	3
0950	Manufacturing Cost and Value Analysis	3
0952	Work Analysis & Improvement	3
0954	Materials Handling	3
0956	Managerial Cost Accounting	3
0961	Plant Layout and Process Planning	3
0962	Traffic and Transportation Management I	3
0963	Manufacturing Processes I	3
0964	Industrial Assembly Techniques	3
0967	Drafting and Manufacturing Standards	3
0968	Case Problems in Management	4
0970	Personnel Management	3
0971	Manufacturing Processes II	3
0973	Training for Results	3
0974	Conference Leadership	3
0975	Management Information Systems	3
0976	Organizational Structure and Change	3
0977	Industrial Supervision Seminar	3
0980	Case Problems in Labor Relations	3
0981	Transactional Analysis for Managers	3
0982	Management by Objectives	3
0983	Time Management	3
1115	Sales Techniques	4
Total Required:		92 credits

Industrial Management - Quality Control Option

Careers

The quality control function is an integral and essential part of a manufacturing operation. The quality control technician is found in a variety of production fields including agricultural/biological, chemical, and industrial engineering technology.

Persons entering this field will possess a job-related educational background in the fundamentals of quality control in manufacturing operations. Under professional direction, the technician analyzes and solves quality control problems, performs laboratory procedures, tests products and equipment, and prepares recommendations and reports to management.

Ivy Tech's Program

The quality control technician program is designed to prepare graduates for entry level positions in manufacturing. The program includes a variety of

Ind. Mgt. Quality Control - continued

courses to meet both the short and long-term goals of the student. The curriculum includes courses in mathematics, management, quality control engineering, testing, and reliability techniques. Graduates are also prepared for the American Society for Quality Control examination leading to the certification of quality control technicians. Courses are offered to allow maximum flexibility in scheduling. The program also allows for field study and cooperative education experiences during the summer quarter.

Graduates of the 6-quarter, 95 credit hour program, are awarded the Associate in Applied Science degree in quality control technology.

Program Levels

Technical Certificate: minimum of 64 credits

Associate in Applied Science: minimum of 95 credits

Industrial Management**Quality Control****Option****Industrial Management - Quality Control Option****Required Technical Courses (48 credits): Credits**

0901	Quality Control Concepts and Techniques I	4
0902	Quality Control Concepts and Techniques II	4
0903	Quality Control Engineering Principles & Techniques	4
0905	Quality Control Engineering Theory and Applications	4
0907	Reliability Objectives	4

0908	Introduction to Nondestructive Tests	4
0909	Mechanical Metrology	4
0912	Manufacturing Organization I	3
0913	Techniques of Supervision I	3
0915	Electrical Metrology	4
0916	Procurement Quality Control	4
0925	Manufacturing Organization II	3
0967	Drafting and Manufacturing Standards	3
9414	Blueprint Reading I	3

Required Related Courses (34 credits):

0571	Survey of Business Data Processing	3
8110	Communications	4
8113	Oral Communications	4
8114	Technical Reporting	3
8203	Technical Mathematics I	4
8204	Technical Mathematics II	4
8210	Statistics	3
8301	Physical Science	3
8401	Human Relations	4
8406	Employment Orientation	2

Elective Courses (13 credits):

8006	Basic Metallurgy	3
8307	General Chemistry	3
8501	Field Study/Co-op Ed	1-15

Total Required:

95

credits

Marketing**Careers**

Marketing is a dynamic segment of business and essential to the American economic system. It is the action center of business, the arena for buyer acceptance or rejection of supplier goods, services and ideas. Career opportunities are to be found in manufacturing, wholesaling and retailing; in the industrial and consumer markets; in profit and non-profit organizations; for the self-employed and the gainfully employed.

Between one-third and one-half of the United States employment is in the marketing segment of business. Occupational opportunities include: (1) the selling and buying functions related to possession, (2) the transportation and storage functions related to merchandising.

Ivy Tech's Program

The Marketing program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objectives. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The general program objectives include:

1. Placement and/or advancement in business, with emphasis on the marketing segment.
2. Sales and sales related occupations.

Students interested in enrolling in this program will have the opportunity for individual counseling. Consequently, some might be eligible for advanced standing because of their previous training or job experience. Others will need to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

The program includes courses in the following areas: marketing, wholesaling, sales management, salesmanship, advertising, distribution, accounting, finance and communications. The courses are presented in various formats such as group or individual instruction. The program may also provide a field project.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 94 credits

Marketing Technology



Marketing

Required Technical Courses (39 credits): Credits

1114	Marketing I	4
1115	Sales Techniques	4

1116	Marketing II	4
1134	Sales Management	4
1135	Principles of Retailing	4
1136	Physical Distribution	4
1147	Principles of Advertising	4
1148	Principles of Insurance	4
1156	Advanced Sales Techniques	3
1157	Entrepreneurship	4

Required Related Courses (41 credits):

0110	Accounting Principles I	4
0122	Business Law I or	
0328	Laws Applied to Business	3
0166	Introduction to Management or	
0320	Management of Principles	3
0323	Business Principles and Organization	3
0942	Purchasing and Inventory Control	4
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8212	Business Mathematics	4
8213	Mathematics of Finance I or	
8268	Mathematics of Business II	4
8401	Human Relations or	
8402	Applied Psychology	4

Electives (14 credits):

0124	Consumer Economics	3
0143	Business Law II	3
0153	Microeconomics	3
0154	Macroeconomics	3
0177	Commercial Credit	3
0178	Credit and Collection	3
0510	Fundamentals of Data Processing	5
0960	Economics of Industry	3
0974	Conference Leadership	3
0983	Time Management	2
1126	Principles of Wholesaling	4
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	1-9

Total Required:

94 credits

Secretarial - Administrative Careers

The administrative secretary handles all secretarial duties including dictation and typing. The duties for an administrative secretary range from filing, routing mail, and answering letters, to statistical research and writing reports.

Demand for administrative secretaries is particularly high in banks, insurance companies, real estate firms, government agencies, and other establishments providing services to the public. Entry level employment opportunities are in almost every facet of business, industry, government, and public or private non-profit agencies.

Secretarial - Administrative - continued

Ivy Tech's Program

The Secretarial-Administrative program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet the student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree. Technical and Occupational Certificate students may substitute approved electives for shorthand.

The program includes courses in the following areas: typewriting, shorthand, communications, office procedures, office calculating machines, business law, accounting, psychology, and human relations. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

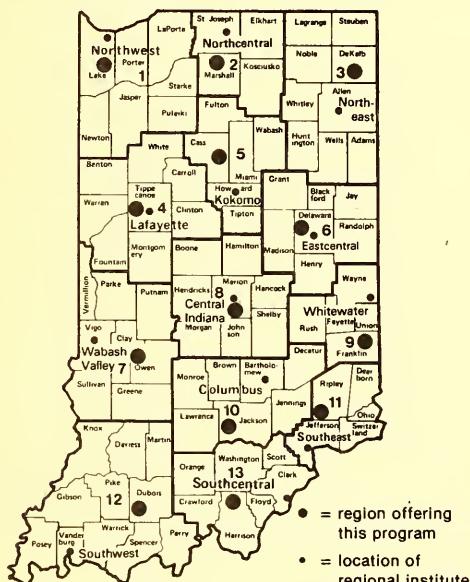
Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 92 credits

Secretarial - Administrative



Secretarial-Administrative

Required Technical Courses (41 credits): Credits

1210	Shorthand I	4
1212	Typewriting I	4
1220	Shorthand II	4
1222	Typewriting II	4

1224	Records Management	3
1230	Shorthand III	4
1232	Typewriting III	4
1236	Office Calculating Machines I	3
1241	Clerical Office Procedures	3
1242	Typewriting IV	4
1262	Typewriting V	4

Required Related Courses (36 credits):

0110	Accounting Principles I or	4
0112	Accounting for Non-Majors	4
0122	Business Law I	3
1214	Personal Development or	3
8402	Applied Psychology	4
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8212	Business Mathematics or	
8213	Mathematics of Finance I	4
8401	Human Relations or	
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	6

Electives (15 credits):

0124	Consumer Economics	3
0323	Business Principles and Organization	3
1233	Key Device Training	4
1240	Shorthand IV	4
1243	Office Management and Procedures	3
1250	Shorthand V	4
1255	Introduction to Word Processing	3
1256	Word Processing Operations	4
1261	Administrative Office Practice	3
1264	Intensive Secretarial Laboratory I	6
1267	Machine Dictation and Transcription	2

Any other Business Division Electives

Total Required: 92 credits

Practicum:

1231	Transcription I - Practicum	1
1234	Typewriting III - Practicum	1
1244	Transcription II - Practicum	1

Secretarial - Legal

Careers

In addition to usual secretarial duties, a legal secretary performs legal research and aids the lawyer in preparing briefs.

Demand for legal secretaries is expected to increase for the next few years. Entry level positions such as professional legal secretary or legal assistant exist in lawyers' offices, legal departments in business, industry or government, and in various other legal organizations.

Ivy Tech's Program

The Secretarial-Legal program is designed to provide instruction for employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

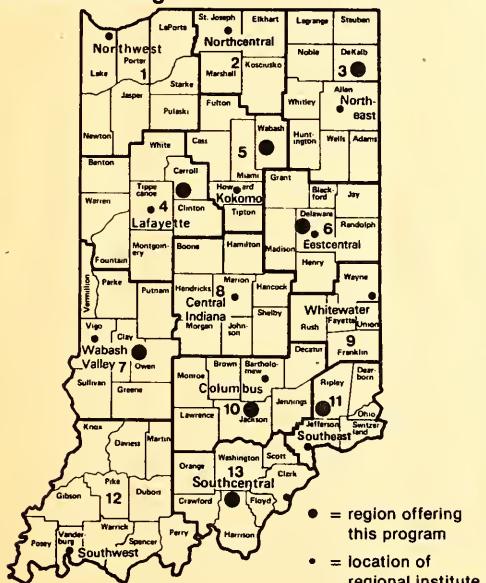
The program includes courses in the following areas: legal terminology, bookkeeping, business law, legal communications, shorthand, personal development and typewriting. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 70 credits

Secretarial - Legal



Secretarial-Legal

Required Technical Courses (38 credits): Credits

1210	Shorthand I or	
1313	Legal Bookkeeping	4
1212	Typewriting I	4
1214	Personal Development	3
1220	Shorthand II or	
1341	Legal Office Practice	4
1222	Typewriting II	4
1230	Shorthand III or	4
1236	Office Calculating Machines I	3
1232	Typewriting III	4
1240	Shorthand IV or	
1342	Legal Typewriting IV	4

1267 Machine Dictation and Transcription

2

1310 Legal Terminology

2

1321 Legal Office Procedures

4

Required Related Courses (32 credits):

0122	Business Law I	3
0143	Business Law II	3
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8213	Mathematics of Finance	4
8401	Human Relations or	
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	6

Electives: (None Required)

0110	Accounting Principles I	4
0510	Fundamentals of Data Processing	5
0571	Survey of Business Data Processing	3
1224	Records Management	3
1250	Shorthand V	4
1262	Typewriting V	4
1331	Legal Office Communications	3
1345	Shorthand IV - Legal	4

Any appropriate electives from Business Science Division

Total Required: 70 credits

Secretarial - Medical

Careers

A medical secretary prepares case histories, medical reports, and performs clerical functions such as typing, filing, and answering telephones. The medical secretary serves as liaison between the doctor and patient and is important in building and maintaining good relations with patients.

Demand for medical secretaries is expected to increase along with other areas of the secretarial field. Entry level positions are in doctor's offices, clinics, hospitals, or other health-related organizations.

Ivy Tech's Program

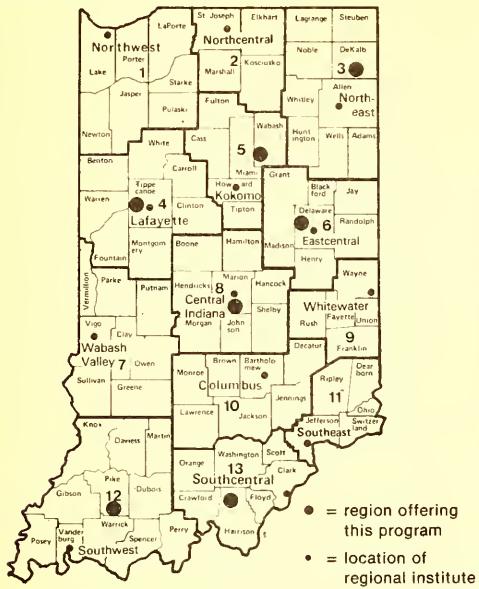
The Secretarial-Medical program provides instruction for initial employment or upgrading skills. The College offers a variety of courses, and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses from the following areas: medical terminology, medical office procedures, bookkeeping, personal development, typewriting, medical filing, communications and transcription. The courses are presented in various formats such as group or individual instruction and laboratory practice.

Secretarial - Medical - continued**Program Levels**

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 49 credits

Secretarial - Medical**Secretarial-Medical****Required Technical Courses (31 credits): Credits**

1212	Typewriting I or	4
3722	Medical Typewriting I	3
1214	Personal Development	3
1222	Typewriting II or	4
3733	Medical Typewriting II	3
1224	Records Management	3
1236	Office Calculating Machines	3
3713	Medical Office Bookkeeping	4
3721	Medical Office Procedures	4
3724	Medical Linguistics I or	2
9355	Medical Terminology	2
3743	Machine Transcription, Medical I	3
3763	Medical Office Management	3

Required Related Courses (16 credits):

8110	Communications	4
8111	Business Communications or	
3732	Medical Office Communications	4
8213	Mathematics of Finance I or	4
8212	Business Mathematics	4
8402	Applied Psychology	4

Electives (2 credits):

3740	Medical Linguistics II	2
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3765	Medical Insurance	2
8401	Human Relations	4
9350	Medical Law and Ethics	2
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
	Total Required:	49
		credits

Small Enterprise & Office Operations**Careers**

Managers help run small commercial businesses, offices, departments or units in government and other organizations. They assist upper management in such areas as personnel, finance, marketing, operations or other functions.

The success or failure of an organization depends heavily on how effectively business managers perform in their jobs. Demand for business management workers is very promising, but future job competition will be relatively keen. Entry level management positions include management trainee, junior account executive, junior executive trainee, assistant buyers and many others.

Ivy Tech's Program

The Small Enterprise and Office Operations Program at Ivy Tech cuts across all other program areas in the business division. This curriculum provides access to the courses in the other programs permitting both breadth and specialization in small enterprise and other supervisory and managerial fields. Two broad areas of specialization are encompassed: small enterprise and office operations to include supervision functions in small firms or departments of larger commercial and industrial organizations and governmental units.

Small enterprise specialization covers the supervisory and managerial skills needed for positions with small firms and retail commercial businesses such as fast foods, appliance sales, auto parts, gas stations, small loan offices, grocery markets and small retail shops. Also included are service-repair-installation firms such as in the building trades and automotive repair industry, TV-radio repair, a host of home services and commercial art and photography. These typically are small family businesses, sole proprietorships, partnerships or franchises.

The skills required in small enterprise management include basic bookkeeping, marketing, accounting, taxation, and business law. Basic skills are essential in supervision, customer relations and psychology, purchasing and inventory control, banking and finance, office management, business organization and partnership, mathematics and communications for business.

The Office Operations option provides instruction for entry level managerial and supervisory jobs in

small to medium-sized firms or departments of larger commercial and industrial organizations or governmental units. Office skills include the fundamentals of accounting, supervision, labor law and relations, internal reports for control, inventory, records management and data collection and recording. Essentially, these are technical support functions typically performed by assistants who operate under the supervision of mid-management level professionals.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science Degree: a minimum of 90 credits

Small Enterprise and Office Operations



Small Enterprise and Office Operations

Small Enterprise Option

Office Operations Option

Required Technical Courses (18 credits): Credits

0110	Accounting Principles I or	
0112	Accounting for Non-Majors	4
0328	Laws Applied to Business or	
0122	Business Law	3
0913	Techniques of Supervision I	3
1112	Introduction to Business or	4
0323	Business Principles and Organization	3
1137	Buying and Inventory Control or	
0942	Purchasing and Inventory Control	4

OPTION - Small Enterprise (12 credits):

1135	Principles of Retailing	4
1148	Principles of Insurance	4
1157	Entrepreneurship	4

OPTION - Office Operations (13 credits):

0320	Management Principles or	3
0166	Introduction to Management	3
0968	Case Problems in Management	4
0973	Training for Results	3
0974	Conference Leadership	3

Required Related Courses (24 credits):

8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8212	Business Mathematics or	4
8267	Mathematics for Business I	4
8213	Mathematics of Finance I or	4
8268	Mathematics for Business II	4
8401	Human Relations or	4
8402	Applied Psychology	4

Electives (to bring the total to 90 credits):

0141	Individual Income Taxes	4
0152	Business Income Tax	4
0165	Budgeting	3
0322	Personnel Administration	4
0571	Survey of Business Data Processing	3
0932	Safety Regulations	3
1236	Office Calculating Machines I	3
1270	Introductory Typewriting (non-majors)	3
8501	Field Study/Co-op Ed	2-9

Electives from the Business Science Division

Total Required: 90 credits



Graphics and Media Division



Audio-Visual Communications

Careers

The Audio-Visual (A-V) Communications technician is trained to produce software for A-V systems in industry, government, and educational institutions. The technician is expected to be knowledgeable in the operation and maintenance of commonly used A-V equipment.

Demand for qualified A-V Communications technicians is favorable. Job opportunities for graduates of the program are available in area corporations, government agencies, schools and colleges, libraries, and business organizations. Nearly all entry level positions require on-the-job training as a prerequisite.

Ivy Tech's Program

The A-V Communications Technology program is designed to prepare students for initial employment or technical skill up-grading. A variety of courses are offered allowing students the option of one course or several to achieve career objectives. The curriculum includes technical courses in the audio-visual area, commercial photography and commercial art, electronics, and related studies. The program is offered as an 8-quarter associate degree with an occupational certificate break-out after 3 quarters and a technical certificate after 5 quarters.

The A-V Communications Technology program includes courses in radio and television, sound systems, A-V production, A-V equipment usage and maintenance, visual arts, and photography. Instruction is offered on an individual, group, and lab basis and includes field study and cooperative education.

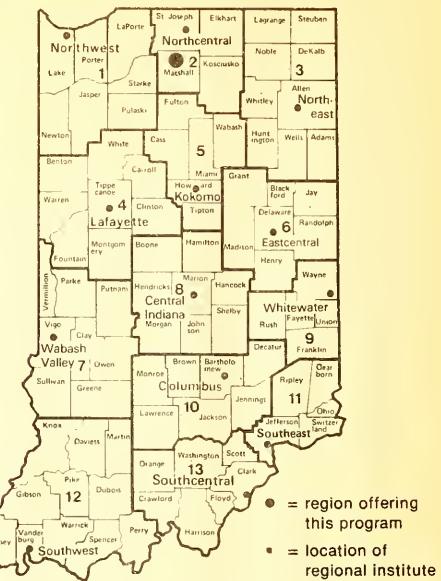
Program Level

Occupational Certificate: minimum of 15 credits

Technical Certificate: minimum of 45 credits

Associate in Applied Science: minimum of 125 credits

Audio-Visual Communications



Audio-Visual Communications

Required Technical Courses (71 credits): Credits

1806	A-V Slide Production	2
1813	Visual Arts Careers Orientation	2
1861	Storyboard Concepts	2
1869	Darkroom Processes	2
1871	A-V Art Design	2
1873	TV Art Design	2
1922	A-V Equipment Utilization and Maintenance	2
1923	Mathematics for A-V Technicians	3
1930	Radio and Television	2
1931	A-V Distribution Systems Design	2
1932	Script Writing I - Slide Presentation	3
1942	Introduction to Video Tape Production	3
1951	A-V Systems for Industry	3
1952	Script Writing for TV	3
1953	Color Video Tape Production	3
1960	A-V Production Cost Estimating	2
1961	Video Tape Editing	2
1962	Message Design	4
1963	Sound Recording and Editing	3
1972	Motivating Psychology	3
1973	A-V Systems for Government and Education	2

1982	Video Systems Maintenance	4
1983	Special Effects in Color	4
1984	Advanced VTR Production	4
1985	Multi-Track Sound Systems and Special Effects	3
1986	Advanced Maintenance Procedures	4
Required Related Courses (50 credits):		
1224	Records Management	2
1614	Fundamentals of Photography I	2
1615	Photographic Science and Theory I	3
1616	Studio Practice I	2
1626	Studio Practice II	2
1627	Darkroom Techniques I	2
1628	Darkroom Techniques II	3
1638	Darkroom Techniques III	2
1661	Photographic Science and Theory III	3
1810	Composition and Design Fundamentals	2
1830	Typographic Theory	3
1858	Storyboard Techniques	2
1885	Portfolio Preparation I	3
6412	DC Fundamentals I	3
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8501	Field Study/Co-op Ed	5
Electives (4 credits):		
Total Required:		125
Credits		

Commercial & Industrial Photography

Careers

Commercial photographers generally make pictures to advertise consumer products or services such as clothing, furniture, automobiles, or food. The work of industrial photographers is generally used in company or industrial publications or to advertise company products or services.

Business and industry offer good job opportunities for photographers as more importance is placed on visual aids for use in meetings, sales campaigns, promotion, and publications. Entry level photography positions may be found in commercial studios, newspaper and magazine publications, government agencies, photographic equipment suppliers and dealers, self employment and many industrial firms.

Ivy Tech's Program

The Commercial and Industrial Photography program emphasizes technical skills from the camera to the darkroom. The program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that

only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree. The program includes courses in the following areas: photography basics, photo materials, lighting and set-up techniques, darkroom techniques, product photography, retouching, composition and design, volume film and print production, color and black and white processes, and specialized commercial photography. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 128 credits

Commercial/Industrial Photography



Commercial and Industrial Photography

Required Technical Courses (51 credits): Credits

1614	Fundamentals of Photography I	2
1615	Photographic Science and Theory I	3
1616	Studio Practice I	2
1624	Fundamentals of Photography II	2
1625	Photographic Science and Theory II	3

Commercial/Industrial Photography - continued

1626	Studio Practice II	2
1627	Darkroom Techniques I	2
1628	Darkroom Techniques II	3
1635	Product Photography	3
1636	Studio Practice III	2
1638	Darkroom Techniques III	2
1642	Industrial and Commercial Techniques I	2
1644	Studio Practice IV	2
1645	Photographic Composition	3
1652	Industrial and Commercial Techniques II	3
1654	Product Illustration	2
1655	Basic Portrait Lighting	1-2
1660	Black and White Portraiture	1-2
1661	Photographic Science and Theory III	3
1663	Color Portraiture	1-2
1665	Custom Color Painting	2
1668	Specialized Commercial Techniques	3
1681	Portfolio Preparation	2-5

Required Related Courses (29 credits):

1810	Composition and Design Fundamentals	
1813	Visual Arts Careers Orientation	
8110	Communications	3-4
8113	Oral Communications	3-4
8114	Technical Reporting	3
8212	Business Mathematics	3-4
8401	Human Relations	4
8403	Psychology of Advertising	3-4
8501	Field Study/Co-op Ed	6

Electives (48 credits):

1610	Introduction to Photography I (non-majors)	
1611	Introduction to Photography II (non-majors)	2
1632	Architectural Photography I	2
1633	Sensitometry I	2
1634	Sequential Photography	3
1640	Architectural Photography II	3
1641	Sensitometry II	3
1650	Advanced Photographic Composition	3
1662	Industrial and Commercial Techniques III	2
1664	Negative Retouching	3
1670	Fundamentals of Optics	2
1671	Advanced Portraiture	2
1672	Industrial and Commercial Techniques IV	3
1673	Advanced Product Photography	2
1674	Journalistic and Editorial Photography	2
1675	Specialized Industrial Techniques	2

1676	Advanced Darkroom Techniques	2
1677	Custom Quantity Printing	2
1678	Color Negative Retouching and Print Finishing	2
1679	Market Survey	2
1680	Natural Light Portraiture	2
1841	Airbrush Photo Retouch	2
8111	Business Communications	4
8307	General Chemistry	3
8501	Field Study/Co-op Ed	1-8

Total Required:**128****credits****Commercial Art****Careers**

Commercial artists perform many tasks involving the use of art media to create illustrations, graphic designs, advertising layouts, fashion drawings, product drawings, and display and package designs for the advertising field. The production artist's task is to prepare art for printing and photographic reproduction.

Demand for qualified commercial artists is very favorable. The demand is for above-average students possessing both the discipline and creativity of the artist. Entry level positions exist in advertising agencies, art studios, and art departments in printing firms, publishing firms, and educational and service organizations. There are also opportunities for self-employed, free-lance artists.

Ivy Tech's Program

The Commercial Art program provides instruction for initial employment or upgrading skills. Prior art training or experience is helpful, but not necessary, as long as the student displays artistic ability. The College offers a variety of courses and it is possible that only one course will meet a student's education objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: drawing, composition and design, illustration media and techniques, visual arts, communications, typography, photography, darkroom processes, copywriting, layout, keylining, life drawing, airbrush retouching, storyboard techniques, and portfolio preparation. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 130 credits

Commercial Art



Commercial Art

Required Technical Courses (90 credits): Credits

1810	Composition and Design Fundamentals	2
1811	Introduction to Illustration Media	2
1812	Basic Drawing Fundamentals	2
1813	Visual Arts Careers Orientation	2
1814	Basic Drawing Techniques I	2
1815	Composition and Design Techniques I	2
1816	Illustration Techniques I	2
1820	Composition and Design Techniques II	2
1821	Illustration Media II	2
1822	Basic Drawing Techniques II	2
1823	Illustration Techniques III	2
1824	Typography Techniques	2
1825	Creative Typography	3
1830	Typographic Theory	3
1831	Black and White Illustration	2
1834	Black and White Media Techniques	2
1835	Sketch Book Drawing	2
1836	Visual Arts Processes	2
1840	Layout Design Fundamentals I	2
1842	Layout Design Techniques I	2
1847	Keylining Fundamentals I	2
1850	Layout Design Fundamentals II	2
1851	Illustration Concentration I	3
1853	Figure Rendering	2
1854	Layout Design Techniques II	2

1855	Creative Illustration Concepts	2
1856	Creative Illustration Methods	2
1857	Figure Drawing for Layout	2
1858	Storyboard Techniques	2
1860	Keylining Techniques I	2
1861	Storyboard Concepts	2
1868	Special Darkroom Techniques	3
1869	Darkroom Processes	2
1870	Keylining Fundamentals II	2
1871	A-V Art Design	2
1872	Keylining Techniques II	2
1873	TV Art Design	2
1881	Technical Illustration	2
1883	Specialized Layout Concepts	2
1884	Specialized Layout Techniques	2
1885	Portfolio Preparation I	3-5
1886	Portfolio Preparation II	3-5

Required Related Courses (28 credits):

Required Courses (22 credits)		
2011	Color Theory	1-3
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
8119	Copywriting	4
8216	Commercial Art Mathematics	2
8401	Human Relations	4
8403	Psychology of Advertising	4
8501	Field Study/Co-op Ed	1-15

Electives (12 credits):

- 1826 Airbrush Rendering
- 1827 Mixed Media Figure Drawing
- 1828 Multi Media Figure Drawing
- 1832 Introduction to Photography
- 1833 Commercial Visual Arts History
- 1841 Airbrush Photo Retouch
- 1843 Life Drawing Anatomy
- 1845 Life Drawing Techniques I
- 1859 Illustration Concentration II
- 1874 Medical Illustration
- 1875 Fashion Illustration
- 1898 Seminar on Advertising
 - Media I
- 1899 Seminar on Advertising
 - Media II

Total Required: 130 credits

Interior Design

Careers

The creative work of interior designers and decorators is being used increasingly by a variety of firms and businesses. Both men and women will find rewarding careers in this area.

Interior designers create an integrated interior environment for either proposed or existing structures. The integration may include space planning and the specification of materials as well as coordination of backgrounds through color scheming, lighting and sound control. The selection of furniture, equipment

Interior Design - continued

and accessories is an integral part of the design process.

A designer may work on residential or commercial interiors. Commercial interiors include offices, health care facilities, financial institutions, educational plants, industrial complexes, hotels, restaurants, ships and aircrafts. Set design for motion pictures, television and stage productions offer other challenges for the qualified designer.

Entry level positions as interior design assistants may be found with interior design departments or firms, sales consultants for furniture retailers, painting and decorating consultant or display coordinator. Other employment opportunities include buyer trainee for home furnishings departments, interior designer for an architectural or contracting firm or self-employment.

Ivy Tech's Program

The Interior Design program is designed to prepare students for initial employment or skill upgrading. An array of courses is offered to meet a variety of educational objectives. Career counseling on an individual basis can determine the course or courses required to meet those objectives. Different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree.

The program includes courses from the following general areas: composition and design, color theory, art history, structural design, interior design, textiles, communications and human relations. The courses are presented in various formats such as group instruction, individual instruction and laboratory practice.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate In Applied Science: a minimum of 96 credits

Interior Design



Interior Design

Required Technical Courses (29 credits): Credits

2013	Fundamentals of Structural Design I	4
2021	Textiles I	3
2022	Fundamentals of Interior Design I	3
2023	Fundamentals of Structural Design II	3
2031	Textiles II	3
2032	Furniture Styles I	3
2033	Furniture Styles II	3
2050	Applied Interior Design I	4
2053	Furniture Arrangements and Space Planning	3

8212 Business Mathematics or
8213 Mathematics of Finance I

Electives (43 credits):	
2011	Color Theory
2012	History of Art I
2018	History of Art II
2041	Furniture Selection
2042	Advanced Textiles
2044	Environmental Psychology
2051	Display I
2055	Environmental Design
2057	Custom Textiles and Furniture
2060	Applied Interior Design II
2061	Display II
2063	Space Planning-Commercial
2064	Merchandise Buying Techniques
2070	Space Planning-Production
2071	Lighting Techniques
2072	Installation Procedures
2073	Kitchen and Bath Planning

Interior Design - continued

2074	Office Landscaping	3
5473	Architectural Rendering	3
7510	Basic Drafting	3
7511	Intermediate Drafting	3
8208	Geometry	3
8212	Business Mathematics	4
8401	Human Relations	4
8402	Applied Psychology	4
8406	Employment Orientation	2
8501	Field Study/Co-op Ed	2
Total Required:		96 credits

Library Resource Aide



Library Resource Aide

Careers

Work,

The Library Resource Aide supports and assists the professional librarian in functions such as library circulation, reference, technical processes, audio-visual, children's services, clerical activities and other related areas.

The employment outlook for library technical assistants is promising. Because opportunities are favorable, the library assistant can find work in large or small communities. Entry level positions may be found with libraries, schools, colleges, universities, business and industry, or government.

public

Ivy Tech's Program

The Library Resource Aide program provides instruction for initial employment of skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses from the following areas: library and learning resources fundamentals, library forms and records, typing, library technical services, A-V productions, communications and office procedures. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project in an outside cooperating library. The Library Resource Aide program consists of four quarters (12 months) if taken on a full-time basis. It can also be taken on a part-time basis, day or night.

Library Resource Aide

Required Technical Courses (32 credits): Credits

2415	Audio-Visual Equipment Operation and Maintenance	3
2417	Library and LRC Fundamentals I	3
2418	Library and LRC Fundamentals II	3
2419	Library Forms and Records	3
2424	Library Technical Services I	3
2425	Audio-Visual Production	3
2426	Library Technical Services II	3
2427	Library Operations and Practices	5
2433	Library Public Services I	3
2434	Library Public Services II	3

Required Related Courses (28 credits):

1212	Typewriting I	3	4
1222	Typewriting II		4
1241	Clerical Office Procedures		3
8110	Communications		4
8113	Oral Communications		4
8401	Human Relations or		
8402	Applied Psychology		4
8501	Field Study/Co-op Ed		5
Electives (5 credits):			7
0110	Accounting Principles I		4
0571	Survey of Business Data Processing		3

Program Levels

Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 67 credits

1233	Key Device Training	4
1832	Introduction to Photography	3
1869	Darkroom Processes	2
2428	Library Technology Seminar	4
2441	Studio Lighting and Set-Up Techniques	3
2442	Introduction to Video Production	3
2443	Introduction to Health Science Library	3
3724	Medical Linguistics I	2
8111	Business Communications	4

Related Education Courses subject to approval of the counselor.

Total Required:

67
credits

Printing

Careers

The printing industry provides employment for many people in a wide variety of specialties. Printing careers cover one or more areas of the printing operation such as type composition, photography, platemaking, presswork, and binding.

Opportunities for employment exist in printing and publishing firms, government agencies, paper products manufacturers, and in many large corporations, banks, insurance companies, colleges, and travel organizations which have their own printing facilities. Nearly all entry level positions require on-the-job training before advancement can occur.

Ivy Tech's Program

The Printing program provides instruction for initial employment or skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree. The program includes courses from the following areas: art and camera preparation, camera and darkroom fundamentals, layout and stripping flats, platemaking, offset presswork, composition, press trouble-shooting, production control, special effects, and ink and paper for offset. The courses are presented in various formats such as group or individual instruction, and laboratory practice. The program may also provide for a field project.

Program Levels

Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 45 credits
 Associate in Applied Science: a minimum of 100 credits

Printing



Printing

Required Technical Courses (69 credits): Credits

2210	Type Composition for Reproduction	2
2211	Art and Copy Preparation	2
2212	Layout and Stripping Flats	2
2213	General Printing Processes	2
2214	Camera Fundamentals	2
2215	Plate Making Fundamentals	2
2216	Offset Presswork Fundamentals	3
2221	Camera-Line and Halftone	2
2222	Stripping Line and Halftone Negative	2
2223	Photo Offset Fundamentals	2
2224	Printing Estimating	3
2225	Offset Presswork I	3
2231	Advanced Camera	2
2232	Offset Presswork Operations	2
2233	Offset Presswork II	3
2240	Special Effect Camera Work	2
2241	Printing Production Practice	2
2242	Press Trouble-Shooting	2
2243	Offset Presswork III	3
2244	Ink and Paper for Offset	2
2251	Special Problems in Offset Preparation	3

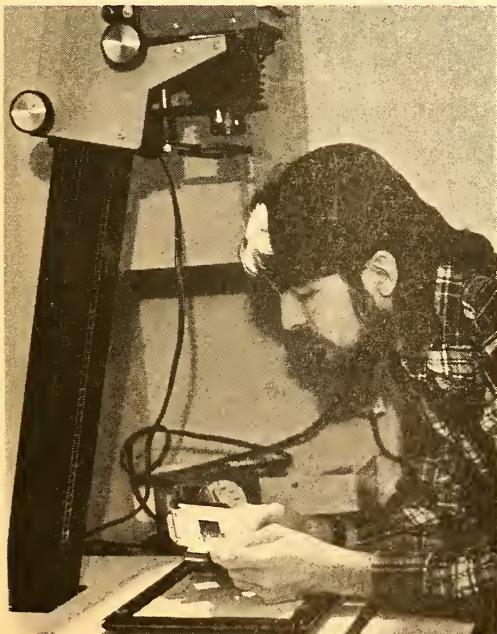
2252	Manufacturing and Organization	3
2253	Supervision I	3
2254	Supervision II	3
2255	Printing Specialization	4
2262	Production Controls	3
2263	Introduction to Photo Typesetting	3
2264	Preventive Maintenance	2

Required Related Courses (31 credits):

0323	Business Principles and Organization	3
1212	Typewriting I	4
8112	Technical Communications	3
8113	Oral Communications	4
8114	Technical Reporting	3
8201	Applied Mathematics I	4
8401	Human Relations	4
8406	Employment Orientation	2
8501	Field Study/Co-op Ed	4

Electives (None Required):

0110	Accounting Principles I	4
1614	Fundamentals of Photography I	2
1624	Fundamentals of Photography II	2
8111	Business Communications	4
8118	Effective Reading	2
Total Required:		100
		credits



Health Occupations Division



Child Care

Careers

The competition for child care job opportunities is high and the demand for well-trained personnel is expected to continue increasing. Entry level positions may be found in nursery schools, day care centers, public or private homes for children, as teacher assistants and pediatric dental assistants. Child care workers must understand early childhood development, parent-child relationships and the handling of groups of young children. Advancement is commensurate with additional training and experience.

Ivy Tech's Program

The Child Care program provides instruction for initial employment. Through observation and practice, the student is provided instruction in such activities as music, art, storytelling and language development. During field experiences, the student progresses from observation to supervised student/assistant teaching and observes and becomes part of parent groups.

Students successfully completing 49 credits in certain prescribed courses can receive a Technical Certificate as a Child Care Specialist I (CCSI). At the completion of the program, students are awarded an Associate in Applied Science degree in Child Care Technology as a Child Care Specialist II (CCSII).

The program includes courses in the following areas: child growth and development, first aid and health, nutrition, recreation, creative activities, art, music, science, accounting, and audio-visual materials. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program also provides for on-the-job training through which the student gains actual work experience.

Program Levels

Technical Certificate: a minimum of 49 credits

Associate in Applied Science: a minimum of 98 credits

Child Care



Child Care

Required Technical Courses (71 credits): Credits

2610	Child Growth & Development	4
2611	Group Care of Children	3
2612	Childhood Health	4
2613	Orientation to Child Care - Seminar	4
2624	Child Care Participation I	4
2625	Legal Aspects of Child Care	3
2626	Science & Social Studies - Preschool Children	4
2627	Child Care Seminar I	2
2631	Child Care Participation II	4
2637	Child Care Seminar II	2
2641	Childhood Movements & Creative Activities	4
2642	Nutrition & Meal Planning	3
2643	Preschool Art	4
2645	Child Care Participation III	4
2647	Child Care Seminar III	2
2651	Language Arts for Children	4
2654	Child Care Participation IV	4
2657	Child Care Seminar IV	2
2660	Preschool Music	4
2665	Child Care Participation V	4
2667	Child Care Seminar V	2

Required Related Courses (27 credits):

0323	Business Principles and Organization	3
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2633	Community Resources	4
2655	Bookkeeping	4
2661	Management Techniques	4
2663	Audio-Visual Materials and Methods	4
8110	Communications	4
8401	Human Relations	4
	Total Required:	98 credits

Culinary Arts Careers

Careers

Food service workers make up one of the largest and fastest growing occupational groups in the nation's labor force. These workers are employed in such businesses as restaurants, hotel/motel dining rooms, department stores, factories, hospitals, nursing homes, or private clubs.

The demand for well-trained food service personnel is expected to continue increasing over the next few years. Entry level opportunities such as broiler-workers, second cooks, fry cooks, caterers, or beginning managerial and supervisory positions can lead with experience to positions of chef or manager.

Ivy Tech's Program

The Culinary Arts program provides instruction for initial employment leading to a career in food service. Successful completion of this one-year program leads to a Technical Certificate.

The program includes courses in the following areas: volume food preparation, nutrition, volume food service, food and beverage management, institutional foods preparation and service, purchasing, gourmet foods preparation, finance, human rela-

tions, and communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Level

Technical Certificate: a minimum of 59 credits

Culinary Arts



Culinary Arts

Required Technical Courses (25 credits): Credits

3414	Introduction to Volume Food Service	3
3452	Food Service I	3
3453	Food and Beverage Service	3
3454	Food Service Specialty - Baking	3
3455	Menu Design	4
3456	Food Specialties II - Garde Manager I	3
3457	Purchasing Procedures	3
3458	Food Specialties III - Garde Manager II	3

Required Related Courses (22 credits):

0913	Techniques of Supervision I	3
0923	Techniques of Supervision II	3
8201	Applied Mathematics I	4
8212	Business Mathematics	4
8308	General Microbiology	3
8501	Field Study/Co-op Ed (Culinary Arts)	5

A combination of electives from the Culinary Arts Option in Hotel-Motel Management or related courses to bring the total to 59 credits.

Total Required:

59 credits

Dental Assistant

Careers

The dental assistant carries out various duties that do not require the dentist's professional knowledge and skill. A dental assistant can see to a patient's comfort, prepare the patient for treatment, obtain the patient's dental records, and hand the dentist proper instruments and materials. In many situations, the dental assistant performs duties such as office administrator, laboratory technician or x-ray technician.

Dental assistants usually find job opportunities with organizations such as private dental offices, dental schools, hospital dental departments, public health departments, or private clinics. Entry level employment opportunities for dental assistants are expected to be excellent over the next few years.

Ivy Tech's Program

The Dental Assistant program provides instruction for initial employment. Successful completion of this one-year program leads to a Technical Certificate.

The program includes courses in the following areas: dental anatomy and physiology, microbiology, pharmacology, oral pathology, dental materials, chairside assisting, typing, communication, human relations, and record keeping. The courses are presented in various formats such as group or individual instruction and laboratory practice. A large portion of the student's time is spent in laboratory work and clinical experiences.

Graduates of the program are eligible for and expect to take the certification examination offered by the Certifying Board of the American Dental Assistant Association, Inc. Successful completion of this certifying examination allows dental assistants to use the title "Certified Dental Assistant," and the initials C.D.A. after their names.

Program Level

Technical Certificate: a minimum of 81 credits

Dental Assistant



Dental Assistant

Required Technical Courses (57 credits): Credits

3001	Introduction to Dental Practice	2
3003	Dental Materials and Laboratory I	4
3007	Preclinical Practice I	5
3008	Dental Anatomy	4
3010	Dental Materials and Laboratory II	4
3011	Preclinical Practice II	5
3012	Oral Pathology - Microbiology	4
3013	Preventive Dentistry/Diet and Nutrition	3
3034	Dental Radiography	5
3038	Clinical Practice I	3

3039	Dental Office Management	4
3943	First Aid and Pharmacology	3
3044	Clinical Practice II	11

Required Related Courses (24 credits):

1212	Typewriting I*	4
8111	Business Communications	4
8113	Oral Communications	4
8401	Human Relations	4
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4

Total Required: 81
credits

*Each student is required to demonstrate competency in typing at 40 wpm and pass a departmental performance test prior to enrolling in the second quarter of the program.

Dietary Assistant

Careers

The dietetic assistant is a member of the dietetic team, functioning under the close supervision of a Registered Dietitian or dietetic technician. The dietetic assistant participates in the food service operation by assuming delegated responsibilities in the area of menu planning, sanitation, personnel management, cost control and food preparation.

Ivy Tech's Program

The Dietetic Assistant program provides instruction for initial employment in food service. The program meets the requirements of the American Dietetic Association and the Indiana State Board of Health. This part-time program includes courses in nutrition, diet therapy, personnel management, sanitation, cost control and food preparation as well as practical experience under the supervision of a Registered Dietitian.

Program Level

Occupation Certificate: a minimum of 15 credits

Dietary Assistant



Dietary Assistant

Required Courses*:

3607	Nutrition and Diet Therapy	5
3608	Dietary Management I	5

3609	Dietary Management II	5
3610	Nutrition	2
3611	Diet Therapy	3
3612	Nutrition Diet Therapy - Practicum	1
3613	Personnel Management	2
3614	Personnel Management - Practicum	1
3615	Sanitation	2
3616	Sanitation - Practicum	1
3617	Cost Control	2
3618	Cost Control - Practicum	1
3619	Food Preparation	2

*Region 01, 03 - Courses 3607, 3608, 3609 only

*Region 02 - Courses 3610 through 3619 only

Emergency Medical Technician - Level II

Careers

An automobile accident, a heart attack, a near drowning or unscheduled childbirth, a gunshot wound—all of these situations demand emergency medical attention. A call from the dispatcher sends emergency medical technicians (EMT's)—who usually work in teams of two—to the scene. These technicians are skilled in the proper use of emergency equipment used prior to and in the hospital's critical care areas. Patients receive appropriate medical care such as restoring breathing, controlling bleeding, treating for shock, immobilizing fractures, care to poison and burn victims, etc.

Employment of EMT's is expected to continue growing as a result of the Emergency Medical Services System Act passed by Congress in 1973 which provides for expansion and improvement of ambulance services. Entry level jobs exist in hospital emergency wards and ambulance service units, trauma centers, police and fire departments, and private ambulance service organizations.

Ivy Tech's Program

The Emergency Medical Technician - Level II program provides training for initial employment and skill up-grading. The program includes courses in anatomy and physiology, cardiology and emergency care techniques.

A 5-credit hour course in Emergency Medical Technician - Ambulance Techniques (3219) is a prerequisite to and may be applied toward the EMT Occupational Certificate program. Following completion of the training, graduates may write the national registry examination to earn the title of Registered EMT - Ambulance.

Emergency Medical Tech - continued

Program Level

Occupational Certificate: a minimum of 30 credits

Emergency Medical Technician



Emergency Medical Technician - Level II

Required Courses (30 credits):

Credits

3217	Emergency Care Techniques I	4
3221	Basic Cardiology	4
3224	Advanced Cardiology	4
3225	Emergency Care Techniques II	5
3246	Practicum in Emergency Care	5
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
Total Required:		30
credits		

Note: Basic Emergency Medical Technician Ambulance Techniques (3219) for 118 contact hours and 5 credits, is a prerequisite of and may be applied toward the Emergency Care Technician program.

Medical Assistant

Careers

The medical assistant helps the physician examine and treat patients and perform the administrative tasks to keep an office running smoothly. The duties of a medical assistant include preparing patients for physical examination, cleaning and sterilizing equipment and maintaining supplies, collecting

specimens, performing simple laboratory tests, and carrying out the business office activities of the doctor.

Employment opportunities for well-trained medical assistants are expected to be excellent over the next few years. Entry level positions may be found in physicians' offices, medical clinics, hospitals, nursing homes, health insurance companies, and other health care agencies.

Ivy Tech's Program

The Medical Assistant program provides instruction for initial employment. Students who successfully complete 46 credits in certain prescribed courses may receive a Technical Certificate. After successful completion of six quarters, students are awarded an Associate in Applied Science degree. All graduates of AAMA/AMA accredited programs are eligible for and expected to take the certification examination offered by the American Association of Medical Assistants. Successful completion of this examination entitles the graduates to use the letters CMA after their names signifying them as Certified Medical Assistants.

Program Level

Technical Certificate: a minimum of 46 credits for the 3-quarter program or 68 credits for the 4-quarter program.

Associate in Applied Science: a minimum of 92 credits.

Medical Assistant



Medical Assistant

Technical Courses:*		Credits	
1222	Typewriting II or	4	
3733	Medical Typewriting II	2	
3712	Medical Office Procedures Clinical I	6	
3713	Medical Office Bookkeeping	4	
3721	Medical Office Procedures	4	
1212	Typewriting I or	4	
3722	Medical Typewriting I or	3	
3723	Medical Typewriting or	2	
3725	Medical Typewriting I	4	
3730	Medical Assistant Laboratory	4	
3731	Medical Assistant Clinical Experience I	5	
3732	Medical Office Communications	4	
3734	Medical Laboratory Techniques I	2	
3735	Medical Laboratory Techniques II	3	
3736	Medical Law and	2	
3737	Medical Ethics or	2	
9350	Medical Law and Ethics	2	
3738	Written Communications	2	
3740	Medical Linguistics II	2	
3741	Medical Office Procedures Clinical II	6	
3743	Machine Transcription Medical I	3	
3750	Medical Office Procedures Clinical III	5	
3751	Machine Transcription Medical II	3	
3753	Drugs and Solutions	2	
3761	Community Health	2	
3763	Medical Office Management	3	
3765	Medical Insurance	2	
3766	Adv. American Red Cross First Aid & Emergency Care	3	
3768	Comprehensive Certification Review	3	
3769	Medical Assistant Administrative Externship	4	

Related Courses:*

0571	Survey of Business Data Processing	3
8110	Communications or	
8111	Business Communications	4
8113	Oral Communications	4
8308	General Microbiology	3
8401	Human Relations	4
8402	Applied Psychology	4
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
9355	Medical Terminology	2

9356	Disease Conditions I	3
9357	Disease Conditions II	3
9358	Pharmacology or	3
9333	Pharmacology and Medication Administration for Unlicensed Personnel	5

Business Science electives

Total Required: 92 credits

*The regional counselor will be responsible for arranging the student's schedule. Minimum requirements for the AAS degree are 92 credits.

Medical Laboratory Technician

Careers

Medical Laboratory Technicians (Certificate) are members of the medical laboratory team. They perform a wide range of laboratory procedures that require a high level of skill and they are supervised by Medical Technologists (Baccalaureate Degree) and Pathologists (M.D.). The training period for certificate holders is one year, after which they are eligible to take the national registry examination. Upon successful completion of these examinations, they will be qualified for employment.

Medical Laboratory Technicians (Associate Degree) which have successfully completed registry examinations are also members of the medical laboratory team. They perform the more complicated and less routine laboratory procedures and also work under the supervision of Medical Technologists and Pathologists. The training period for MLT (AD) is usually two years and, the attainment of an Associate Degree. Both the certificate holder and the MLT (AD) may work in several areas or specialize in one field. Employment opportunities for medical laboratory workers are expected to increase rapidly over the next few years as government agencies push for more qualified laboratory personnel. Laboratory technicians may find positions in hospitals, independent laboratories, physicians' offices, clinics, public health agencies, pharmaceutical firms, and research institutions.

Ivy Tech's Program

The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) reviews medical laboratory programs for the AMA Council on Medical Education to assure that minimum educational standards are met.

All Ivy Tech Medical Laboratory Technology programs have been reviewed and are approved by NAACLS. Only graduates from NACLS approved programs are eligible to sit for most national registry examinations. Two of these registering bodies are the American Society of Clinical Pathologists and the National Certification Agency for Medical

Medical Laboratory Tech - continued

Laboratory Personnel. After earning satisfactory examination scores, the graduates may use registry designated initials after their names: for example, MLT(ASCP), CLA(ASCP), or CLT(NCA). Ivy Tech awards an Associate in Applied Science Degree for successful completion of the two-year course and a Technical Certificate for the successful completion of the one-year course. Both programs include courses in the following general areas: bacteriology, parasitology, chemistry, hematology, immunology, anatomy, physiology, immunohematology, laboratory mathematics, statistics and instrumentation.

Program Levels

Technical Certificate: a minimum of 73 credits

Associate in Applied Science: a minimum of 130 credits

Medical Laboratory Technician



Medical Laboratory Technician

Technical Courses:*

		Crédits
2811	Fundamentals of Laboratory Techniques	4-6
2813	Clinical Immunohematology Techniques	4
2814	Clinical Routine Analysis Techniques	4
2820	Clinical Hematology Techniques	8
2821	Clinical Immunohematology Applications I	3-6

2822	Clinical Routine Analysis Applications	3-4
2823	Clinical Microbiology Techniques	6
2830	Clinical Chemistry Techniques	8
2831	Clinical Hematology Applications	5-8
2832	Clinical Immunology Techniques	4
2840	Clinical Chemistry Applications	6-10
2841	Clinical Microbiology Applications	4-6
2842	Clinical Immunology Applications	2-4

Related Courses:*

9313	Health Careers Chemistry	3
9350	Medical Law and Ethics	2
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
9355	Medical Terminology	2

Electives:*

2828	Advanced Microbiology Parasitology and Mycology Tech	4
2863	Instrumentation	4
8210	Statistics	3
9357	Disease Conditions II	3

Total Required: **73**
credits

*The regional counselor will be responsible for arranging the student's schedule. Minimum requirements for the Technical Certificate are 73 credits; Associate Degree - 130 credits.

Medical Records

Careers

The Medical Records technician provides important support services by maintaining health information systems in hospitals, clinics, nursing homes, ambulatory care centers, physicians' offices, and insurance companies. The duties of the technician include: health record evaluation, compilation and analyses of health information, coding, indexing, record retrieval, medical transcription, word processing, and reporting. Graduates are encouraged to seek certification for the Registered Records Technician (RRT) by taking the comprehensive certification examination. Employment opportunities for the RRT are excellent in Indiana due to the limited number of institutions training in this field. The number of entry level positions in medical records departments of hospitals, nursing homes, and clinics will increase as the medical record becomes a basic document for governmental-agency-patient related matters in the health field.

Ivy Tech's Program

The Medical Records Technology (MRT) program provides instruction in the field of medical records, biological sciences, and secretarial studies. It is

also designed to prepare the graduate for the certification examination following completion of the Associate in Applied Science Degree.

The program can be completed in six quarters of full-time study and one summer session of directed clinical practice under professional supervision. The curriculum includes anatomy and physiology, secretarial and business courses, related education, and technical courses in medical records. In addition, a structured field experience (directed clinical practice) at an affiliating hospital or health care agency is arranged during the second year of the program.

Program Level

Associate in Applied Science: minimum of 99 credits

Medical Records



Medical Records

Required Technical Courses (47 credits): Credits

3722	Medical Typewriting I	3
3733	Medical Typewriting II	3
3736	Medical Law	2
3737	Medical Ethics	2
3743	Machine Transcription Medical I	3
3765	Medical Insurance	2
3810	Medical Record Science I	3
3820	Medical Record Science II	3
3830	Medical Record Science III	3
3841	Introduction to Pathology	3
3842	Seminar in Medical Records	1
3845	Medical Record Science IV	3
3846	Directed Clinical Practice I	6
3847	Directed Clinical Practice II	2
3848	Directed Clinical Practice III	4

3849 Directed Clinical Practice IV

4

Required Related Courses (35 credits):

0571	Survey of Business Data Processing	3
1431	Medical Filing and Indexing	3
3761	Community Health	2
8110	Communications	4
8111	Business Communications	4
8113	Oral Communications	4
9306	Health Careers Mathematics	3
9307	Health Careers Biology I	2
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
9355	Medical Terminology	2

Electives (17 credits):

1224	Records Management	3
1236	Office Calculating Machines I	3
1241	Clerical Office Procedures	3
1265	Word Processing Typewriting	2
3721	Medical Office Procedures	4
3751	Machine Transcription Medical II	3
4244	Operating Room Medical Terminology	2
8401	Human Relations	4
8402	Applied Psychology	4
8405	Social Problems	4

Total Required: 99 credits

Note: Approved for only the Associate Degree.

Mental Health Rehabilitation

Careers

Mental Health Rehabilitation technicians are prepared to assist residents of public and private mental health hospitals and community mental health centers. As a member of the health team, the technician assists in activity therapy, work therapy, supportive psychotherapy, educational and recreational programs, and by assisting residents in learning survival skills and basic body functions.

The program provides a new job entry for those interested in para-professional level work in the field of mental health. Employment opportunities are expected to be good during the next decade with the expansion of hospital services and mental health centers.

Ivy Tech's Program

The Mental Health Rehabilitation Technology program is designed to develop both a basic understanding of the field and desirable attitudes and skills in persons who will work closely with the emotionally disturbed and/or retarded person. The curriculum is a combination of specialized and technical courses in areas directly related to mental health, general education, and supervised experience in mental hospitals, clinics, facilities for

Mental Health Rehabilitation - continued

the retarded, and other community mental health settings.

The College offers lower job entry training at the Occupational and Technical Certificate level and an intensive two-year program which prepares the graduate for a close working relationship with professionals in the field.

Program Levels

Occupational Certificate: minimum of 15 credits

Technical Certificate: minimum of 45 credits which must include courses required by the State Mental Health Hospital.

Associate in Applied Science: minimum of 101 credits including required courses and regional electives.

Mental Health Rehabilitation



Mental Health Rehabilitation

Required Technical Courses (63 credits): Credits

2701	Basic Techniques of Client Treatment - Physical	4
2702	Basic Techniques of Client Treatment - Behavioral Management	4
2710	Techniques of Client Treatment Clinical I	4
2711	Techniques of Client Treatment I Physical	4

2712	Techniques of Client Treatment I Behavioral	4
2720	Techniques of Client Treatment Clinical II	4
2730	Techniques of Client Treatment Clinical III	4
2734	Management of Client Living Units	4
2741	Developmental Model	4
2742	Task Analysis	4
2745	Normalization	4
2751	Client Assessment and Documentation	4
2760	Recreation and Creative Activities	3
2761	Interdisciplinary Team	4
2762	Service Delivery Systems for Developmentally Disabled	4
2763	Advanced Individual Programming	4

Required Related Courses (30 credits):

2770	Accreditation Standards and Certification	4
2775	Supervision for Client Treatment	4
8110	Communications	4
8114	Technical Reporting	3
8201	Applied Mathematics I <u>or</u>	
8202	Applied Mathematics II <u>or</u>	
8203	Technical Mathematics I	4
8401	Human Relations	4
8402	Applied Psychology	4
9333	Pharmacology and Medication Administration for Unlicensed Personnel <u>or</u>	5
9358	Pharmacology	3

Electives (8 credits):

2721	Physiology of the Aging Process	4
2731	Program Rationale for Client Treatment I	2
2732	Program Rationale for Client Treatment II	2
2733	Current Issues of Mentally Retarded/Developmentally Disabled	2
2743	Legal Aspects of Client Treatment	2

Total Required: **101**
credits

Practical Nursing

Careers

Licensed Practical Nurses are essential members of the nursing profession responsible for numerous nursing functions. A partial list of functions include patient hygiene, taking blood pressures, performing therapeutic measures, administering medications,

monitoring patients receiving intravenous therapy and blood transfusions, and recording patient data. The employment outlook for practical nurses is expected to be very good during the next few years. Employment is available in hospitals, nursing homes, private duty, and some public health agencies.

Ivy Tech's Program

The Practical Nursing program provides instruction for initial employment in the nursing field. The program meets the requirements of the Indiana State Board of Nurses' Registration and Education and prepares candidates for the examination required for licensure as a practical nurse in Indiana. Graduates of the one-year program are awarded a Technical Certificate.

The Practical Nursing program includes courses in basic science, nursing skills and techniques, medical surgical nursing, maternal child nursing as well as clinical experience in health care agencies. Clinical experience is under the direct supervision of the Practical Nursing faculty of the College.

Program Level

Technical Certificate: a minimum of 74 credits

Practical Nursing



Practical Nursing

Required Technical Courses (74 credits): Credits

4409	Basic Science for Practical Nursing I	4
4410	Basic Science for Practical Nursing II	4

4411	Nursing Techniques and Care I	3
4420	Nursing Techniques and Care II	3
4421	Medical Surgical Nursing I	4
4422	Nutrition and Diet Therapy	2
4423	Medical Surgical Clinical Nursing I	3
4430	Nursing Techniques and Care III	3
4431	Medical Surgical Nursing II	4
4432	Medical Surgical Clinical Nursing II	3
4440	Maternal Health Nursing	3
4441	Personal Vocational Relationships	2
4442	Maternal Clinical Nursing	4
4443	Nursing Techniques and Care IV	3
4444	Medical Surgical Nursing III	4
4445	Medical Surgical Clinical Nursing III	4
4446	Community Health Resources	2
4450	Nursing Techniques and Care V	3
4451	Medical Surgical Nursing IV	3
4452	Medical Surgical Clinical Nursing IV	3
4453	Pediatric Nursing	3
4454	Pediatric Clinical Nursing	3
9310	Pharmacology for Licensed Practical Nurses or	4
4460	Pharmacology I and	2
4461	Pharmacology II	2
<i>Total Required:</i>		74

Radiologic Technology

Careers

The radiologic technician or medical radiographer, prepares the patient for x-ray examination, positions them, and determines the proper exposure factors to produce radiographs that aid the radiologist (physician who specializes in the use of x-rays) to interpret the diagnosis of disease or injury in the patient.

Certified Technicians are employed in hospitals, clinics, physicians' offices, federal and state health agencies as well as some educational institutions.

Employment opportunities are expected to expand rapidly in the future as x-ray equipment is increasingly used in diagnosis. After gaining some proficiency in the routine procedures, many students find part-time employment in the affiliating hospitals while they continue in the program. Students receive instruction in fundamental principles of anatomy, positioning radiation physics and protection, exposure factors and nursing care at the College. These courses are applied in the clinical setting where supplemental instruction occurs. Students are evaluated in the clinical area according to the accrediting agency's competency model to assure adequate experience in routine diagnostic radiographic procedures.

Ivy Tech's Program

The program is approved by the American Medical Association and accredited by the American Registry of Radiologic Technologists. At the end of the twenty-four month program, graduates receive an Associate in Applied Sciences Degree and are eligible to take the national certification examination. In accordance with directives of the accrediting agencies, a significant portion of the program (approximately 2,400 hours) is devoted to the clinical application of the education process which takes place in several hospitals affiliated with the programs. Students receive no stipend from the hospitals but classes are scheduled to allow evenings and weekends free. The 2,400 hour clinical portion includes 671 total hours of related class and lab type instruction at the hospitals for which credit is awarded.

The first quarter is spent in concentrated didactic courses at the College for a total of 22 contact hours per week. The students rotate to the hospitals to determine permanent assignment to a clinical affiliate for the remainder of the program. Clinical attendance is limited to approximately 48 contact hours during this quarter.

Beginning with the second quarter, students who are assigned to an affiliate will spend an average of 24 contact hours per week (three 8-hour days) in clinical experience and education. Approximately 16 contact hours are spent at the College.

Third quarter through eighth quarter entails 6-8 contact hours per week in College courses plus 32 hours per week (four 8-hour days) in clinical education and experiences.

Admission to Program

Applicants must submit specific pieces of information and meet several entry requirements for the program. These requirements are those in compliance with the ESSENTIALS for accredited programs as directed by the AMA accrediting agency. A personal interview and satisfactory health report are also required. Prior to clinical acceptance, students must purchase liability insurance (malpractice) through the College. Admission requirements and procedure are available upon request from the College. Students with specific and related skills or work experience may be able to test out of some College courses or clinical activity. Credits from other post-secondary institutions are evaluated for transfer.

Program Level

Associate in Applied Science: a minimum of 112 credits.

Radiologic Technology



Radiologic Technology

Required Technical Courses (83 credits): Credits

4609	Nursing Procedures for X-Ray Technicians	2
4613	Radiation Physics I	3
4620	Orientation to X-Ray Technology	4
4622	Radiation Physics II	3
4623	X-Ray Clinical Education I	5
4624	Radiographic Positioning I	3
4625	Principles of Radiographic Exposures I	3
4633	Radiographic Positioning II	2
4634	Principles of Radiographic Exposures II	3
4638	X-Ray Clinical Education II	6
4642	Imaging Techniques	3
4643	Radiographic Positioning III	3
4648	X-Ray Clinical Education III	6
4650	Radiographic Positioning IV	3
4655	X-Ray Clinical Education IV	6
4661	Special Procedures	3
4668	X-Ray Clinical Education V	6
4672	Radiobiology	3
4678	X-Ray Clinical Education VI	6
4685	General Examination Review	4
4688	X-Ray Clinical Education VII	6

Required Related Courses (23 credits):

3248	Basic Life Support Concepts and Skills
	3

9305	Technical Mathematics for Health Occupations	5
9350	Medical Law and Ethics	2
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
9355	Medical Terminology	2
9356	Disease Conditions I or	
9357	Disease Conditions II	3
Electives (6 credits):		
0110	Accounting Principles I	4
0568	Basic Language Programming	4
0913	Techniques of Supervision I	3
1212	Typewriting I	4
1270	Introductory Typewriting (non-majors)	3
3219	Basic Emergency Medical Technician-Ambulance	5
3761	Community Health	2
4697	Seminar for Radiologic Technicians	1
8110	Communications	4
8113	Oral Communications	4
8123	Total Communication - Manual	4
8308	General Microbiology	3
8401	Human Relations	4
8402	Applied Psychology	4
Total Required:		112 credits

Respiratory Therapy

Careers

Respiratory therapy workers, sometimes called inhalation therapy workers, treat patients with cardio-respiratory problems. Their duties involve the therapeutic use of medical gases, air and oxygen administering apparatus, environmental control systems, humidification and aerosols, drugs and medications, ventilatory control, postural drainage, chest physio-therapy and breathing exercises, respiratory rehabilitation, assistance with cardiopulmonary resuscitation, and the maintenance of natural, artificial and mechanical airways.

Employment opportunities for respiratory therapy workers are expected to be good during the next few years. Entry level positions may be found in hospitals, physicians' offices, clinics, oxygen equipment rental companies, ambulance services, nursing homes and universities.

Ivy Tech's Program

The Respiratory Therapy Technician program provides instruction for initial employment. The successful completion of this one-year program leads to a Technical Certificate awarded by the College. The program includes courses in the following areas: anatomy and physiology, respiratory therapy science, nursing techniques, cardiopulmonary physiology, clinical medicine, and clinical experience. Clinical experience is provided in cooperating hospitals and clinics under the supervision of a

physician and respiratory therapist. The courses are presented in various formats such as group or individual instruction, laboratory practice, and clinical experience.

Program Level

Technical Certificate: a minimum of 77 credits

Respiratory Therapy



Respiratory Therapy

Required Technical Courses (65 credits): Credits

4810	Basic Science	4
4812	Respiratory Therapy Science I	6
4813	Nursing Techniques	3
4820	Cardiopulmonary Physiology	4
4821	Respiratory Therapy Science II	6
4823	Clinical Practicum I	6
4833	Clinical Practicum II	9
4835	Respiratory Therapy Science III	6
4837	Pulmonary Pathophysiology	4
4841	Clinical Practicum III	13
4844	Cardiopulmonary Laboratory Diagnosis	4

Required Related Courses (12 credits):

8401	Human Relations or	
8402	Applied Psychology	4
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4

Electives (None Required):

4822	Respiratory Therapy Applications I	5
4831	Clinical Medicine	4

Respiratory Therapy - continued

4832	Respiratory Therapy Applications II	5
4845	Seminar	2
8307	General Chemistry	3
8308	General Microbiology	3
9305	Technical Mathematics for Health Occupations	5
9350	Medical Law and Ethics	2
9358	Pharmacology	3
Total Required:		77 credits

Surgical Technician

Careers

A surgical technician assists surgeons and anesthesiologists before, during and after surgery. The surgical technician also helps in patient preparation, moves the patient to the operating room, and following surgery, transfers patients to the recovery room, and assists in cleaning and maintaining equipment.

Employment opportunities for surgical technicians are expected to be good over the next few years. Entry level positions may be found in hospitals, the armed forces or other institutions that have hospital facilities.

Ivy Tech's Program

The Surgical Technician program provides instruction for initial employment and taking the comprehensive certification examination given by the Association of Surgical Technologists Inc. This association awards a certificate to applicants who pass this examination. A Certified Surgical Technician is recognized as competent in the field and is generally paid a higher salary. Successful completion of the one-year program leads to a Technical Certificate.

The program includes courses in the following areas: anatomy and physiology, surgical techniques, medical law and ethics, microbiology, surgical procedures and clinical experience. The courses are presented in various formats such as group or individual instruction, laboratory practice and clinical experience.

Program Level

Technical Certificate: a minimum of 71 credits

Surgical Technician



Surgical Technician

Required Technical Courses (46 credits): Credits

4211	Surgical Techniques I	10
4221	Surgical Procedures I	5
4222	Clinical Applications I	8
4230	Surgical Procedures II	5
4231	Clinical Applications II	8-10
4240	Clinical Applications III	8-10
4242	Surgical Procedures III	4

4213 Microbiology for the Surgical Technician or

8308	General Microbiology	3
9350	Medical Law and Ethics	2
9353	Anatomy and Physiology I	4
9354	Anatomy and Physiology II	4
9355	Medical Terminology	2
9358	Pharmacology	3

Electives (4 credits):

8401	Human Relations	4
4232	Obstetrical Techniques	3
4241	Emergency Room Techniques	2

Total Required: **71 credits**

Required Related Courses (21 credits):

3248	Basic Life Support Concepts and Skills	3
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Trade and Technical Division



Agricultural Equipment

Careers

Increased specialization and mechanization in the agriculture industry have created a higher demand for skilled technicians. These technicians are needed to fill positions in the manufacturing, sales and service of agricultural and garden equipment.

Entry level employment opportunities may be found with agricultural or industrial equipment manufacturers, retail and distributing organizations, farm supply and food processing industries, and construction contractors and road builders. Agricultural occupations afford many opportunities for employment and advancement.

Ivy Tech's Program

The Agricultural Equipment program offers students thorough understanding of servicing, repairing and maintaining all types of agricultural equipment. Students can specialize in either agricultural equipment or industrial equipment after the first three quarters of the program. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The agricultural equipment option includes courses in the following areas: plows, disks, harrows, cultivators, fertilizer applicators, forage and grain harvesting equipment, hay balers, grain dryers, and processing and handling equipment.

The industrial equipment option includes courses in the following areas: back hoes, earth movers, graders, skidders, bulldozers, loaders and forestry equipment.

The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for on-the-job training through which a student gains actual work experience.

Program Levels

Occupational Certificates: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 95 credits

Agricultural Equipment



Agricultural Equipment

Required Technical Courses (48 credits): Credits

5113	Principles of Internal Combustion Engines	2
5114	Direct Current Fundamentals	2
5115	Hydraulic Fundamentals	2
5116	Tractor Engines	3
5123	Diesel Engines I	3
5124	Manual Transmissions	3
5125	Open Center Hydraulic Systems	3
5126	Closed Center Hydraulic Systems	3
5127	Hydraulic Assist Transmissions	3

Agricultural Equipment - continued

Required Technical Courses (48 credits):		Credits
5132	Diesel Engines II	3
5133	Environmental Control	4
5134	Parts Department Management	3
5135	Diesel Engines III	2
5137	Service Department Management .	3
5142	Lawn and Garden Equipment	3
5146	Fuels, Lubricants and Coolants	3
5156	Hydrostatic Hydraulics Systems	3

For Industrial Equipment Technology**Option (12 credits):**

5136	Hydramatic Transmissions	3
5138	Industrial Transmissions	3
5144	Crawler Undercarriages	2
5158	Diesel Engines IV	2
5159	Torque Converters	2

For Agricultural Equipment Technology**Option (9 credits):**

5145	Farm Machinery II	3
5154	Farm Machinery I	3
5164	Farm Machinery III	3

Required Related Courses (23 credits):

5847	Air Conditioning-Theory, Service and Components	3
5848	Air Conditioning-Diagnosis and Repair	3
8065	Welding Practice for Agricultural Equipment	3
8112	Technical Communications	3
8113	Oral Communications	4
8114	Technical Reporting	3
8401	Human Relations	4

Electives (to bring total to 95 credits):

5147	Bearings and Seals	3
5148	Belts and Chains	3
5149	Tire and Tracks	2
5157	Agricultural and Industrial Equipment Sales	2
5160	Chain Saw Maintenance	4
5162	Diesel Injection Nozzle Service	2
5163	Internal Combustion Engines Laboratory	3
5165	Diesel Pump Calibration and Service	2
5166	Suburban Garden Equipment I	3
5167	Customer Relations	3
5168	Agricultural Safety	3
5169	Preventive Maintenance	2
5170	Farm Machinery IV	3
5180	Farm Machinery V	3
5182	Farm Machinery VI	3
7711	Basic Machining Fundamentals	3
7741	Basic Heat Treat and Metallurgy	3

8201	Applied Mathematics I	4
8402	Applied Psychology	4
8501	Field Study/Co-op Ed	1-15
Total Required:		95
credits		

Applied Fire Science

• = region offering this program
• = location of regional institute

Applied Fire Science**Careers**

Every year, fire destroys thousands of lives and property worth millions of dollars. Professional and volunteer firefighters and fire prevention technicians help protect the public from this danger.

Demand for personnel in this field is expected to increase steadily. As new fire departments are formed and others enlarge, employment should rise. Employment opportunities may be found with local fire departments, industrial plants, or fire underwriters. All new personnel in this field must successfully pass certain written and physical examinations.

Ivy Tech's Program

The Applied Fire Science program emphasizes skills in the acquisition of technical and general training, and the development of mature judgement necessary in firefighting as well as administration. The College offers a variety of courses and it is possible that only one course will meet a student's educa-

tional objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses in the following areas: fire technology, fire apparatus, electricity, fire department hydraulics, chemistry, fire fighting, fire prevention and protection, hazardous materials, rescue practices and procedures, fire investigations, fire service inspection, communications, legal problems, and human relations. The courses are presented in various formats such as group or individual instruction and laboratory practice.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 92 credits

Electives (5 credits):

1212	Typewriting I	4
3219	Basic Emergency Medical Technician-Ambulance	5
5351	Industrial Safety and Fire Control	3
5391	Management Essentials	4
5394	Aircraft Fire Fighting I	3
5395	Aircraft Fire Fighting II	3
5396	Shipboard Fire Fighting	3
5397	Radioactive Emergencies	3
6013	Blueprint Reading I	3

Total Required:

92 credits

Applied Fire Science

Required Technical Courses (66 credits): Credits

5313	Introduction to Fire Technology	3
5314	Fire Apparatus I	3
5322	Electricity	3
5323	Fire Apparatus II	3
5324	Fire Department Hydraulics I	3
5325	Fire Department Hydraulics II	2
5332	Fire Fighting Strategy and Tactics I	3
5333	Fire Alarm and Protection Equipment	3
5334	Fire Fighting Strategy and Tactics II	2
5342	Hazardous Materials I	3
5343	Rescue Practices and Procedures	3
5350	Chemistry II	2
5352	Hazardous Materials II	3
5353	Fire Investigations	4
5360	Fire Service Inspection	4
5361	Fire Service Organization and Management	4
5362	Fire Department Specifications	4
5363	Fire Prevention	4
5364	Legal Problems in Fire Service	4
5393	Building Materials	3
8307	General Chemistry	3

Required Related Courses (21 credits):

0913	Techniques of Supervision I	3
8112	Technical Communications	3
8114	Technical Reporting	3
8203	Technical Mathematics I	4
8401	Human Relations	4
8402	Applied Psychology	4

Architectural Drafting

Careers

The Architectural Drafting technician performs many of the planning tasks necessary to communicate the architect's designs to the builder. Typically the architect's communication involves the translation of ideas into graphic form.

As business and industry continue to grow, the demand for well-trained technicians in architectural drafting increases. Job entry level opportunities include the operation of an architect's office, use of building codes, materials of construction, contract documents, estimating, and field observation. In this career field, a student would probably be employed by architects, structural and mechanical-electrical systems engineers, contractors, sub-contractors, and building equipment and materials suppliers.

Ivy Tech's Program

The Architectural Drafting program provides instruction to develop the attitude, skills and knowledge necessary for a career in building construction drafting and detailing. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses in the following areas: drafting, residential construction materials, commercial construction materials, geometry, technical math, production drawing, light, medium and heavy construction drafting, mechanical and electrical equipment, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Architectural Drafting - continued**Program Levels**

Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 45 credits
 Associate in Applied Science: a minimum of 104 credits

Architectural Drafting**Architectural Drafting****Required Technical Courses (48 credits):**

Credits

5422	Residential Construction Materials	3
5430	Light Construction Presentation Drafting	3
5431	Light Construction Layout Drafting	3
5432	Mechanical and Electrical Equipment	3
5433	Light Construction Detail Drafting	3
5440	Medium Construction Presentation Drafting	3
5441	Medium Construction Layout Drafting	3
5442	Medium Construction Detail Drafting	3
5450	Heavy Construction Presentation Drafting	3
5451	Heavy Construction Layout Drafting	3
5453	Heavy Construction Detail Drafting	3

5460	Team Project Presentation Drafting	3
5461	Team Project Layout Drafting	3
5462	Team Project Detail Drafting	3
7510	Basic Drafting	3
7511	Intermediate Drafting	3

Required Related Courses (34 credits):

5452	Estimating	3
5471	Surveying Theory	3
5472	Surveying Field Problems	2
7551	Statics	3
7552	Strength of Materials	3
8112	Technical Communications	3
8203	Technical Mathematics I	4
8208	Geometry	3
8209	Trigonometry	3
8302	Mechanics or	
8303	Heat, Light and Sound	3
8401	Human Relations	4

Electives (22 credits):

5421	Basic Architectural Drafting	3
5423	Commercial Construction Materials	3
5443	Electrical Equipment	3
5470	Business Presentation Drawing	4
5473	Architectural Rendering	3
5476	Business Principles	3
7520	Descriptive Geometry	3
8113	Oral Communications	4
8114	Technical Reporting	3
8118	Effective Reading	2
8204	Technical Mathematics II	4
8406	Employment Orientation	2
8501	Field Study/Co-op Ed	1-15

Total Required:**104 credits****Auto Body Repair****Careers**

Auto body repair workers fix damaged vehicles by straightening bent frames, removing dents, welding torn metals, refinishing, and replacing parts. Most auto body workers specialize in automobiles, small trucks, large trucks, buses or truck trailers. Most auto body repair workers are employed by shops specializing in body repairs and painting, and by automobile and truck dealers.

Ivy Tech's Program

The Auto Body Repair program provides instruction for initial employment or skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: body repair, welding, auto chassis and

suspension, front end alignment, electricity, collision damage repair, and auto paint shop practices. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Levels

Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 61 credits

Auto Body Repair



Auto Body Repair

Required Technical Courses (22 credits): Credits

5601	Basic Body Repair I	2
5602	Basic Body Repair II	2
5603	Basic Body Repair III	2
5604	Basic Body Repair IV	2
5611	Collision Damage Repair I	2
5612	Collision Damage Repair II	2
5620	Frame and Chassis I	2
5621	Frame and Chassis II	2
5624	Auto Body Welding I	2
5625	Auto Paint Shop Practice I	2
5630	Collision Damage Appraising	2

Required Related Courses (20 credits):

5812	Automotive Chassis and Suspension	3
5814	Automotive Front End Alignment	3
5823	Basic Electricity	3
8201	Applied Mathematics I	4

8064 Welding Practice for Auto Body I

3

8401 Human Relations

4

Electives (19 credits):

5605	Auto Body Power Tools	2
5606	Auto Body Hand/Hydraulic Tools	4
5622	Frame and Chassis III	2
5623	Frame and Chassis IV	2
5631	Upholstering	2
5632	Auto Paint Shop Practice II	2
5636	Auto Paint Refinishing	2
5637	Custom Paint Refinishing	2
5638	Glass Installation	2
5639	Fiberglass/Plastics Repair	2
5847	Air Conditioning Theory/Service and Components	3
5848	Air Conditioning Diagnosis and Repair	3
5851	Automotive Accessories	3
5865	Service Organization and Management	3
5866	OSHA for Automotive Service Environment	4
8066	Introductory Welding (non-majors)	3
8112	Technical Communications	3
8114	Technical Reporting	3
8301	Physical Science	3
8406	Employment Orientation	2

Practicum:

5609	Basic Body Repair I - Practicum	1
5615	Basic Body Repair II - Practicum	1
5607	Basic Body Repair III - Practicum	1
5608	Basic Body Repair IV - Practicum	1
5613	Collision Damage Repair I - Practicum	1
5614	Collision Damage Repair II - Practicum	1
5627	Auto Paint Shop Practice I - Practicum	1
5628	Frame and Chassis III - Practicum	1
5634	Auto Paint Shop Practice II - Practicum	1

Total Required: **61 credits**

Automotive Service

Careers

The automotive service mechanic performs preventive maintenance, diagnoses breakdowns, and repairs automobiles or other motor vehicles. As a result of society's great transportation needs and because today's cars are highly complex, automobiles need regular servicing.

Automotive Service - continued

Job opportunities for automotive service personnel are expected to be plentiful in the years ahead. Entry level positions may be found in automobile dealers, automobile repair shops, gasoline service stations, government, taxi cab and automobile leasing companies, or self-employment.

Ivy Tech's Program

The Automotive Service program provides instruction for initial employment or skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses in the following general areas: chassis and suspension, front end alignment, braking systems, electricity, electronic ignition, fuel and carburetion, tune-up, starting and charging systems, engine theory and design, overhaul, transmissions, rear axle, air conditioning, and engine tools and equipment. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

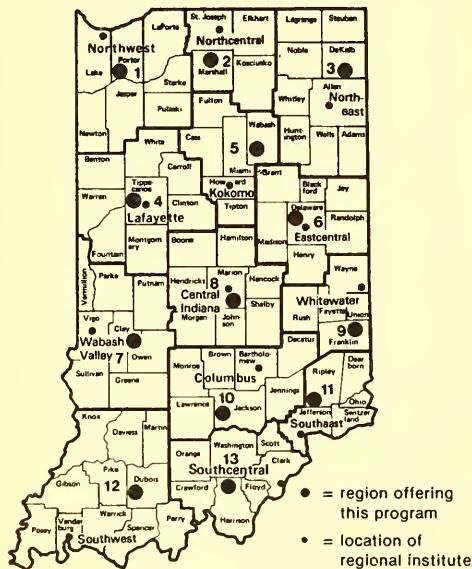
Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 111 credits

Automotive Service



Automotive Service

Required Technical Courses (78 credits): Credits

5812	Automotive Chassis and Suspension	3
5813	Automotive Braking Systems	3
5814	Automotive Front End Alignment	3
5821	Engine Theory, Design and Construction	3
5822	Engine Tools and Equipment	3
5823	Basic Electricity	3
5825	Fuel and Carburetion-Theory and Circuits	3
5826	Fuel and Carburetion-Overhaul	3
5827	Conventional Ignition Systems	3
5828	Electronic Ignition Systems	3
5832	Starting and Charging Systems-Testing	3
5833	Starting and Charging Systems-Overhaul	3
5834	Engine Overhaul	3
5835	Manual Transmission Overhaul	3
5843	Differentials and Rear Axle Overhaul	3
5845	Advanced Tune Up	3
5847	Air Conditioning-Theory, Service and Components	3
5848	Air Conditioning-Diagnosis and Repair	3
5851	Automotive Accessories	3
5852	Engine Tune Up	3
5854	Automatic Transmission Theory and Operation	3
5855	Automatic Transmission In-Car Service	3
5856	Automatic Transmission-Bench Overhaul I	3
5857	Automatic Transmission-Bench Overhaul II	3
5862	Comprehensive Diagnosis and Procedures I	3
5863	Comprehensive Diagnosis and Procedures II	3

Required Related Courses (14 credits):

8112	Technical Communications	3
8202	Applied Mathematics II or	
8203	Technical Mathematics I	4
8301	Physical Science	3
8401	Human Relations	4

Electives (19 credits):

5842	Automotive Diesel Engine Overhaul I	3
5846	Vehicle Inspection and Safety	2
5849	Auto Diesel Engine Overhaul II	3
5850	Auto Diesel Engine Theory	3
5859	Motorcycle Maintenance	3
5860	Emissions Control	3
5861	Automotive Blueprint Reading	4
5864	Automotive Parts Handling	3

5865	Service Organization and Management	3
5866	OSHA for Auto Service Environment	4
5867	Basic Shop Practice	2
5868	Small Engine Maintenance	3
5869	Recreational Vehicle Maintenance	3
8201	Applied Mathematics I	4
8501	Field Study/Co-op Ed	1-15

Practicum:

5817	Automotive Braking - Practicum	1
5836	Engine Overhaul - Practicum	1
5838	Engine Overhaul II - Practicum	1
5839	Engine Overhaul III - Practicum	1
5840	Engine Overhaul IV - Practicum	1
5841	Differential & Rear Axle Overhaul - Practicum	1
5844	Advanced Tune-Up - Practicum	1
5853	Engine Tune-Up - Practicum	1
5858	Automatic Transmission Bench Overhaul I - Practicum	1
5873	Automatic Transmission Bench Overhaul II - Practicum	1
5874	Comprehensive Diagnosis II - Practicum	1

Total Required:

111
credits

Building Construction

Careers

Workers in the building construction occupations build, repair and modernize homes and other buildings, highways, airports, and other structures. Construction workers represent the largest group of skilled workers in the nation's labor force.

Demand for construction workers is expected to increase steadily over the next few years, but this will be largely affected by the nation's economy. Entry level positions may be found with contractors, concrete companies, lumber yards, architects, engineers, government, or manufacturing companies.

Ivy Tech's Program

The Building Construction program provides instruction for initial employment or skill upgrading. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses in the following areas: wood, concrete and masonry construction, tools and woodworking equipment, house framing, use of steel square, millwork, stair building, sash and door hanging, flooring and roof flashing, basic

plumbing, heating and electrical wiring, blueprint reading, architectural drawing, surveying, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 109 credits

Building Construction



Building Construction

Required Technical Courses (45 credits): Credits

6001	Carpentry Fundamentals	3
6002	Construction Tools and Skills	3
6003	Construction Materials	3
6004	Safety and First Aid	3
6011	Floor and Wall Layout and Construction	3
6012	Roof Construction	3
6013	Blueprint Reading I	3
6014	Electrical Wiring Fundamentals	3
6015	Residential Wiring	3
6023	Blueprint Reading II	3
6024	Plumbing Fundamentals	3
6036	Masonry and Concrete Fundamentals	3
6095	Construction Research	3
7112	Heating Fundamentals	3
7123	Air Conditioning and Refrigeration Fundamentals	3

Building Construction - continued**Required Related Courses (25 credits):**

0110	Accounting Principles I	4
0122	Business Law I	3
0323	Business Principles and Organization	3
8112	Technical Communications	3
8201	Applied Mathematics I	4
8301	Physical Science	3
8401	Human Relations	4
8501	Field Study/Co-op Ed	1-15

THE FOUR OBJECTIVES AVAILABLE IN THE PROGRAM ARE PURSUED AFTER THE COMPLETION OF THE FIRST THREE QUARTERS. THE FOLLOWING COURSES ARE SEPARATED BY OBJECTIVE: CARPENTRY, ELECTRICAL, MASONRY AND PLUMBING.

For Carpentry (22 credits):

6021	Carpentry - Advanced Framing	3
6032	Exterior Trim	3
6033	Interior Trim	3
6034	Millwork	3
6047	Cabinetry	3
6056	Estimating and Specifications-Carpentry	3
8202	Applied Mathematics II	4

Electives to bring total for Carpentry to 109 credits

For Electrical (16 credits):

6020	Electrical Blueprint	3
6030	Electrical Estimating	3
6031	Electrical - Commercial Wiring	3
6048	Industrial Wiring	3
8202	Applied Mathematics II	4

Electives to bring total for Electrical to 109 credits

For Masonry (24 credits):

6026	Advanced Skills in Masonry	3
6027	Masonry Estimating and Specifications	3
6041	Special Problems in Masonry Construction	3
6045	Special Problems in Concrete	3
6050	Advanced Masonry and Design	3
6054	Electrical and Plumbing - Mechanical Installation	3
	Electives in Masonry	6

Electives to bring total for Masonry to 109 credits

For Plumbing (19 credits):

6022	Plumbing - Design and Installation I	3
6025	Plumbing Blueprint	3
6035	Plumbing Estimating	3
6049	Commercial Installations - Plumbing	3
8202	Applied Mathematics II	4
	Electives in Plumbing	3

Electives to bring total for Plumbing to 109 credits

Electives (to bring total to 109 credits):

6060	Advanced Residential Design	3
6065	Cabinetry I	3
6093	Special Problems in Building Construction	3
6094	Advanced Projects in Building Construction	3

Diesel Power**Careers**

The diesel mechanic diagnoses and corrects mechanical faults in diesel powered vehicles and equipment. The use of diesel power on both stationary and mobile equipment has made great progress due to the economy of operation and comparatively low maintenance costs.

Employment of diesel mechanics is expected to increase rapidly over the upcoming years. Most diesel mechanics must gain actual experience as a trainee mechanic before specializing or advancing to a skilled mechanic position. Entry level positions may be found with diesel engine distributors, dealers or manufacturers, farm and construction equipment service firms, government, and independent repair shops.

Ivy Tech's Program

The Diesel Power program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: fuel systems, manual transmission overhaul, heavy duty brakes, auto brakes, and basic electricity. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 48 credits

Diesel Power



Diesel Power

Required Technical Courses (44 credits): Credits

6213	Electrical Fundamentals	2
6214	Diesel Electrical Laboratory I	3
6215	Diesel Electrical Laboratory II	3
6224	Tune-Up Procedure Theory	4
6225	Tune-Up Shop I	3
6226	Tune-Up Shop II	3
6231	Fluid Power Fundamentals	3
6235	Diesel Engine Theory I	4
6237	Diesel Engine Rebuilding Shop I	3
6238	Industrial Diesel Engine Rebuilding Shop II	3
6239	Diesel Engine Rebuilding Laboratory III	3
6243	Diesel Fuel Injection Pump Theory	4
6244	Diesel Fuel Injection Pump Laboratory I	3
6247	Diesel Pump and Fuel Systems II	3

Required Related Courses (3 credits):

8112	Technical Communications	3
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Electives (1 credit):

6210	Basic Welding I	3
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6220	Diesel Engines I	3
6221	Diesel Electrical Systems I	2
6230	Diesel Engines II	3
6232	Diesel Pump and Fuel Systems I	3
6240	Diesel Engine Diagnosis	3
6241	Heavy Duty Brakes Systems	2
6242	Heavy Duty Chassis and Suspension System	3
6245	Basic Shop Practices	2

Practicum:

6222	Diesel Electrical Systems I - Practicum	1
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Total Required: 48 credits

Electronics Communication

Careers

Electronics communications is a field in which skilled technicians operate, maintain, research and construct communications equipment. The field includes television, radio, radar, sonar, computers, spacecraft guidance, and control instruments. Communications technicians work with engineers and scientists on complex technical projects.

Employment opportunities in this field are expected to continue increasing. In most states, a state license examination must be passed before an individual can pursue a career in electronics. Once this requirement is met, entry level positions may be found in most industries' maintenance divisions, electronics service firms, utility companies, communication firms, or government. Advancement or self-employment is possible after gaining experience and further training.

Ivy Tech's Program

The Electronics Communications program provides instruction for the federal and state license examinations and initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead the student to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree. This program also provides an option for those students who wish to specialize in radio and television servicing instead of general communication electronics.

The program includes courses in the following areas: AC-DC fundamentals, testing equipment, troubleshooting, active devices, electronic circuits, semi-conductors, integrated circuits, AM-FM radio, monochrome and color television, television troubleshooting, and digital principles and applications. The courses are presented in various formats such as group or individual instruction and

Electronics Communications - continued

laboratory practice. The program may also provide for a field study practice.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105 credits

Electronics Communications

• = region offering this program

• = location of regional institute

Electronics Communications**Required Technical Courses (63 credits):**

	Credits
6412 DC Fundamentals I	3
6414 DC Fundamentals II	3
6423 AC Fundamentals I	3
6425 AC Fundamentals II	3
6434 Introduction to Active Devices	3
6435 Electronics Circuits I	3
6436 AM Radio	3
6438 FM Radio	3
6445 Monochrome Television	3
6446 Integrated Circuits	3
6447 Special Semi-Conductors	3
6448 Color Television	3
6450 Television Trouble-Shooting	3
6451 Communications Electronics I	3
6454 Electronics Circuits II	3
6455 Circuit Analysis	3
6456 Advanced Trouble-Shooting	3
6562 Digital Principles I	3
6563 Digital Principles II	3
6577 Digital Principles III	3
6578 Digital Applications	3

Required Related Courses (18 credits):

8110 Communications or	4
8112 Technical Communications	3
8203 Technical Mathematics I	4
8204 Technical Mathematics II	4
8209 Trigonometry	3
8401 Human Relations	4

Total Required:

22 credits

Electives (24 credits):

6413 Fabrication	3
6420 Introduction to Data Processing and Computers	3
6424 Trouble-Shooting Techniques	3
6426 Electronics Drafting	3
6440 CET Preparation	2
6441 FCC 3rd and 2nd Class License	4
6442 FCC 1st Class License	4
6443 Indiana State R and TV License	4
6452 Communications Electronics II	3
6453 Communications Electronics III	3
6457 Electro-Mechanical Controls	3
6458 Magnetic Recording	3
6459 Business Practices	2
6525 Introduction to Test Equipment	3
8113 Oral Communications	3
8114 Technical Reporting	3
8206 Technical Calculus I	4
8207 Technical Calculus II	4
8302 Mechanics	3
8303 Heat, Light, and Sound	3
8501 Field Study/Co-op Ed	1-15

Total Required:

105 credits

Cable Television Installer Option**Required Technical Courses (15 credits):**

6610 Introduction to Electricity	3
6611 Fundamentals of Cable	3
6620 System Design	3
6622 Cable Methods and Splicing	3
6633 Safety Techniques	3

Required Related Courses (7 credits):

8401 Human Relations	4
8501 Field Study/Co-op Ed	3

Total Required:

22 credits

Electronics Technology**Careers**

The electronics technician assists the engineer and, in most cases, holds a position between the engineer and skilled craftsman. This technician is skilled in troubleshooting electronic equipment, performing operations and calculations, testing and reporting. Job opportunities for people who are well trained in this field are expected to increase as our society continues to industrialize. Entry level positions such as engineering aide, repair technician, in-

spector, assembler, sales representatives, and many others may be found with electronics manufacturers, distributors, retailers, electronics service firms, government, or other electronics related firms.

Ivy Tech's Program

The Electronics Technology program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's occupational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses in the following areas: AC-DC fundamentals, test equipment, troubleshooting, active devices, electronics circuits, integrated circuits, rotating machines, circuit analysis, industrial electronics, industrial controls, digital principles and applications, and electro-mechanical controls. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105 credits

Electronics Technology



Electronics Technology

Required Technical Courses (63 credits): Credits

6412 DC Fundamentals I	3
6414 DC Fundamentals II	3

6423 AC Fundamentals I	3
6425 AC Fundamentals II	3
6434 Introduction to Active Devices	3
6435 Electronic Circuits I	3
6446 Integrated Circuits	3
6447 Special Semi-Conductors	3
6454 Electronics Circuits II	3
6455 Circuit Analysis	3
6538 Rotating Machines I	3
6539 Rotating Machines II	3
6543 Basic Industrial Electronics	3
6544 Introduction to Industrial Controls	3
6553 Industrial Electronics I	3
6554 Industrial Electronics II	3
6562 Digital Principles I	3
6563 Digital Principles II	3
6574 Advanced Electro-Mechanical Controls	3
6577 Digital Principles III	3
6578 Digital Applications	3

Required Related Courses (18 credits):

8110 Communications or	4
8112 Technical Communications	3
8203 Technical Mathematics I	4
8204 Technical Mathematics II	4
8209 Trigonometry	3
8401 Human Relations	4

Electives (24 credits):

6424 Trouble-Shooting Techniques	3
6520 Microprocessors I	3
6525 Introduction to Test Equipment	3
6527 Peripherals I	3
6530 Test Equipment Maintenance	3
6531 Independent Study	3
6534 Industrial Interfaces	3
6535 Peripherals II	3
6536 Programming	3
6540 Medical Electronics I	3
6541 Medical Electronics II	3
6542 Medical Electronics III	3
6546 Electrical Maintenance	3
6548 Programming Examples	3
6550 Electro-Mechanical Controls	3
6551 DC Fundamentals III	3
6552 AC Fundamentals III	3
6555 Medical Electronics and Safety	3
8113 Oral Communications	3
8114 Technical Reporting	3
8205 Technical Mathematics III	2
8206 Technical Calculus I	4
8207 Technical Calculus II	4
8302 Mechanics	3
8303 Heat, Light, and Sound	3
8501 Field Study/Co-op Ed	1-15

Total Required:
105
credits

Electronics Technology - continued**Biomedical Electronics Option****Biomedical Electronics Option****Required Technical Courses (66 credits): Credits**

6412	DC Fundamentals I	3
6414	DC Fundamentals II	3
6423	AC Fundamentals I	3
6424	Trouble-Shooting Techniques	3
6425	AC Fundamentals II	3
6434	Introduction to Active Devices	3
6435	Electronics Circuits I	3
6436	AM Radio	3
6438	FM Radio	3
6446	Integrated Circuits	3
6447	Special Semi-Conductors	3
6454	Electronics Circuits II	3
6455	Circuits Analysis	3
6525	Introduction to Test Equipment	3
6540	Medical Electronics I	3
6541	Medical Electronics II	3
6542	Medical Electronics III	3
6553	Industrial Electronics I	3
6562	Digital Principles I	3
6563	Digital Principles II	3
6577	Digital Principles III	3
6578	Digital Applications	3

Required Related Courses (32 credits):

6583	Electrical Safety for Hospitals	4
8112	Technical Communications	3

8114	Technical Reporting	3
8203	Technical Mathematics I	4
8204	Technical Mathematics II	4
8205	Technical Mathematics III	2
8211	Computer Mathematics	2
9322	Biophysics for Health Occupations or	2
9354	Anatomy and Physiology II	4
9350	Medical Law and Ethics	2
9353	Anatomy and Physiology I	4
9355	Medical Terminology	2

Electives (9 credits):

8113	Oral Communications (section 71)	3
8209	Trigonometry	3
8302	Mechanics	3

Total Required: 107 credits

Heating, Air Conditioning and Refrigeration**Careers**

Heating, air conditioning and refrigeration technicians work on the equipment which cools and heats homes, offices, schools, and other buildings. They also work on refrigeration equipment.

Employment opportunities in the heating, air conditioning and refrigeration industry are expected to increase rapidly over the next few years. Skilled workers in this field can be in positions such as heating, air conditioning and refrigeration mechanic, furnace installer, oil burner mechanic, gas burner mechanic, or sales representative. Entry level positions may be found in office buildings, factories, restaurants, theaters, hospitals, government agencies or by self-employment.

Ivy Tech's Program

The Heating, Air Conditioning, and Refrigeration program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree.

The program includes courses in the following areas: heating, air conditioning, refrigeration, electricity, mechanics, gas and oil heating service, electrical cooling service, electric and hydronic heating service, mechanical cooling service, heat pump service, electric motors and controls, duct fabrication

and installation, blueprint reading, commercial refrigeration, psychometrics, air distribution, movement and ventilation design, control systems, and equipment sales. The courses are presented in various formats such as group or individual instruction and laboratory practice.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 107 credits

Heating, Air Conditioning, and Refrigeration



Heating, Air Conditioning and Refrigeration

Required Technical Courses (79 credits): Credits

7112	Heating Fundamentals	3
7113	Basic Electricity for Air Conditioning	3
7114	Basic Mechanics and Shop Techniques	3
7123	Air Conditioning and Refrigeration Fundamentals	3
7124	Heating Service (Gas and Oil)	3
7125	Motors and Motor Control	3
7126	Air Conditioning and Refrigeration	3
7127	Heating Service (Electrical & Hydronic)	3
7133	Cooling Service Electrical	3
7134	Cooling Service Mechanical	3
7135	Electrical Circuits and Controls	3
7136	Psychrometrics	3

7137	Heat Loss and Gain Calculation	3
7143	Blueprint Reading	3
7144	Commercial Refrigeration	3
7145	Heat Pump Service	3
7146	Advanced Cooling Service	3
7153	Advanced Commercial Refrigeration	3
7154	Duct Fabrication and Installation	3
7155	Specifications and Estimating	3
7162	Specialized Environmental Systems I	3
7163	Air Distribution System Design	3
7165	Advanced Electrical Controls	3
7174	Service Organization and Management	3
7175	Equipment Sales	3
7176	Applied Design	4

Required Related Courses (7 credits):

8110	Communications or Technical Communications	4
8401	Human Relations	4

Electives (21 credits):

5847	Air Conditioning - Theory, Service and Components	3
5848	Air Conditioning - Diagnosis and Repair	3
6024	Plumbing Fundamentals	3
7147	Uniform Mechanical Codes	2
7151	Energy Management	2
7152	Air Balancing	3
7157	Alternative Energy Fundamentals	3
7158	Absorption Air Conditioning Systems	3
7510	Basic Drafting	3
8066	Introductory Welding (non-majors)	3
8113	Oral Communications	4
8114	Technical Reporting	3
8118	Effective Reading	2
8201	Applied Mathematics I	4
8202	Applied Mathematics II	4
8203	Technical Mathematics I	4
8208	Geometry	3
8209	Trigonometry	3
8301	Physical Science	3
8501	Field Study/Co-op Ed	1-15

Practicum:

7115	Basic Electricity for Air Conditioning-Practicum	1
7160	Duct Fabrication and Installation - Practicum	1
7167	Air Distribution System Design-Practicum	1

Total Required:

107 credits

Industrial Drafting

Careers

With today's modern technology and complex mass production methods, the creation of a new product or improvement of an existing product is a highly involved science. The industrial drafting technician plays a major role in this process.

Industry is constantly searching for new technicians with the training and ideas to help bring products to market, or help improve the necessary manufacturing processes. In large industries, people with industrial drafting skills are needed in liaison work to correlate the efforts of the design engineer, customer representative and manufacturing plant. The positions can range from an entry level detailer on the drawing board to a designer with additional experience and training.

Ivy Tech's Program

The Industrial Drafting program provides instruction for initial employment or upgrading of skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate of Applied Science Degree.

The program includes courses in the following areas: drafting, machine tool, industrial processes and systems, production drawing, product drafting, trigonometry, geometry, tool drafting, die drafting, product design drafting, mechanisms and machines, gear and cam design drafting, metallurgy, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

Program Level

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 107 credits

Industrial Drafting



● = region offering this program
• = location of regional institute

Industrial Drafting

Required Technical Courses (39 credits):

		Credits
7510	Basic Drafting	3
7511	Intermediate Drafting	3
7522	Production Drawings	3
7530	Product Drafting I	3
7532	Tool Drafting	3
7533	Die Drafting	3
7540	Product Design Drafting	3
7541	Advanced Tool and Gauge Design Drafting	3
7550	Gear and Cam Design Drafting	3
7553	Advanced Die Design Drafting	3
7555	Mold Design Drafting or	
7560	Machine Design Drafting	3
7572	Industrial Design Project Drafting	6

Required Related Courses (37 credits):

7521	Industrial Processes and Systems	3
7531	Mechanisms and Machines	3
7551	Statics	3
7552	Strength of Materials	3
7565	Metallurgy Fundamentals	2
8112	Technical Communications	3
8114	Technical Reporting	3
8203	Technical Mathematics I	4
8208	Geometry	3
8209	Trigonometry	3
8302	Mechanics or	
8303	Heat, Light and Sound	3
8401	Human Relations	4

Electives (31 credits):

0931	Time and Motion Study	3
7520	Descriptive Geometry	3
7528	Introductory Drafting for Heating and Air Conditioning	3
7529	Introductory Drafting for Machine Tool	3
7543	Technical Illustration	3
7545	Product Drafting II	3
7547	Electronic Drafting	3
7556	Cutting Tool Design Drafting	3
7557	Jig and Fixture Design Drafting	3
7558	Sheet Metal Drafting Project	3
7563	Advanced Jig and Fixture Design Drafting	3
7571	Industrial Planning and Estimating	3
7575	Numerical Control and Data Processing	3
7576	Manufacturing Planning and Estimating	4
7577	Design Problems	4
7578	Piping Fundamentals	3
8113	Oral Communications	4
8118	Effective Reading	2
8204	Technical Mathematics II	4
8406	Employment Orientation	2
8501	Field Study/Co-op Ed	1-15

Practicum:

7564 Metallurgy-Practicum

1

Total Required:**107 credits**

Industrial Maintenance

Careers

Industrial maintenance personnel spend much of their time performing preventive maintenance. By regularly inspecting equipment, performing general maintenance and maintaining accurate maintenance records, they prevent machine trouble which could cause later breakdowns.

Job opportunities for well-trained industrial maintenance personnel are expected to rise steadily during the next few years as manufacturing and production increases and the machinery utilized becomes more complex. Most entry level jobs are found in manufacturing industries such as food products, primary metals, machinery, chemicals fabricated metal products, transportation equipment, paper publishing and rubber.

Ivy Tech's Program

The Industrial Maintenance program provides instruction to perform installation and general maintenance in three major areas: machine tools, heating and air conditioning, electrical wiring and equipment. The College offers a variety of courses

and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

This program provides the student with an opportunity to specialize in either industrial equipment maintenance or industrial facilities maintenance. The program includes courses in the following areas: supervision, blueprint reading, drafting, industrial safety, machine tool, welding, AC-DC fundamentals, troubleshooting, electrical maintenance, rotating machines, machine diagnosis and repair, hydraulic and pneumatic principles, preventive maintenance, carpentry, plumbing, construction, masonry and concrete and heating and cooling service. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

Program Level

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105 credits

Industrial Maintenance



● = region offering this program

• = location of regional institute

Industrial Maintenance - continued

Industrial Maintenance

Options in: Industrial Equipment or Industrial Facilities

Required Courses (18 credits):

- 8112 Technical Communications
- 8401 Human Relations
- Science Electives
- Mathematics Electives

57 credits elected from:

- Any Mathematics or Science Courses - Limited to 8 elective credits
- Any Communications Skills Courses - Limited to 4 elective credits
- Any Business Division Courses - Limited to 8 elective credits
- Any Industrial Maintenance Courses (7300 Series) and
- Any Other Trade and Technical Division Courses

Industrial Equipment Option (30 credits):

Electricity/Electronics electives	6
Industrial Management electives	6
Drafting/Blueprint Reading electives	6
Machine Tool electives	6
Welding electives	6

OR

Industrial Facilities Option (30 credits):

- Electricity/Electronics electives
- Industrial Management electives
- Drafting/Blueprint Reading electives
- Heating, Air Conditioning and Refrigeration electives
- Building Construction electives

Total Required:

Machine Tool

Careers

Machine tool technicians work in production departments, maintenance departments, tool rooms and job shops. They spend a great deal of their time operating machine tool equipment at peak efficiency.

Job opportunities may be found in factories that produce fabricated metal products, transportation equipment, and machinery in large quantities. Demand for these skilled workers is expected to in-

crease as rapidly as metal-working and plastics industries expand, and most of the openings will be in the larger manufacturing/industrial centers.

Ivy Tech's Program

The Machine Tool program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree. The program includes courses in the following areas: machine tool, blueprint reading, machining, specialized machining, set-up and operation, machine tool processing, and technical communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

Program Levels

Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 45 credits
Associate in Applied Science: a minimum of 103 credits

Machine

Tool



Machine Tools

Required Technical Courses (36 credits): Credits

7710	Basic Machine Tool Introduction	3
7711	Basic Machining Fundamentals	3
7712	Machining Fundamentals	3

7720	Machine Tool Processing	3
7721	Machine Tool Set-Up and Operation	3
7730	Advanced Machine Tool Processing	3
7731	Basic Print Reading	3
7733	Advanced Machine Tool Set-Up and Operation	3
7734	Advanced Print Reading	3
7740	Specialized Machining Theory	3
7742	Specialized Machine Tool Application I	3
7743	Specialized Machine Tool Application II	3

Required Related Courses (17 credits):

8112	Technical Communications	3
8201	Applied Mathematics I	4
8208	Geometry	3
8209	Trigonometry	3
8401	Human Relations	4

Electives (50 credits):

7331	Industrial Machine Electrical Circuits	3
7341	Basic Hydraulic and Pneumatic Principles	3
8501	Field Study/Co-op Ed	1-15
9416	Basic Diemaking I	4
9417	Advanced Diemaking I	4
9419	Basic Molding	4
9425	Basic Diemaking II	4
9426	Advanced Diemaking II	4
	Any Machine Tool (77 Series) courses	

Practicum:

7713	Machining Fundamentals - Practicum	1
7722	Machine Tool Processing - Practicum	1
7723	Machine Tool Set-Up - Practicum	1
7732	Advanced Machine Tool Processing - Practicum	1
7735	Advanced Machine Tool Set-Up - Practicum	1
7748	Specialized Machine Tool Applications II - Practicum	1
7754	Tool Fabrication I - Practicum	1
7755	Tool Fabrication II - Practicum	1

Total Required:

**103
credits**

port personnel at the technician level. Pollution treatment technicians assist researchers, public health scientists and water plant operators. Job opportunities in this field are expected to increase over the next few years. Treatment plants have grown more complex and require additional and highly trained operating staffs. Water and wastewater technicians can function in areas such as research or pilot plant development and operation, operator or assistant operator of water purification facilities, assistant in designing operational facilities, or as a member of the public health team.

Ivy Tech's Program

The Pollution Treatment program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree.

The Pollution Treatment Technology program offers meaningful, job-related training in a relative short time at a low cost. Courses, workshops, seminars, short schools, and review sessions are offered in many locations across the State. This training is conducted in the fields of wastewater treatment, water supply treatment, air pollution, solid wastes, toxic substances, water distribution and hazardous materials. A two-year associate degree program is offered at several campuses for those candidates who wish to obtain a comprehensive background in Pollution Treatment Technology.

The program includes courses in the following areas: environmental control, chemistry, physical science, communications, research, hydraulics, microbiology, water supply and treatment, equipment and maintenance, reporting and purchasing, community sanitation, air pollution, environmental administration, and plant operations. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

The Environmental Training Coordination Center at IVTC - Northwest, is the focal point for curriculum development, instructional materials, teaching aids, instructor development and the lending library for the College on a statewide basis.

Program Levels

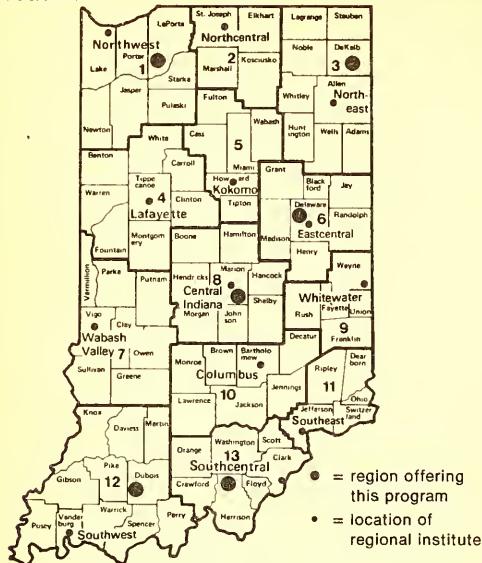
Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 45 credits
 Associate in Applied Science: a minimum of 105 credits

Pollution Treatment

Careers

The impact of technological developments in the field of air, water and wastewater treatment combined with the magnitude of the waste disposal problems has helped create the need for competent sup-

Pollution Treatment



Pollution Treatment

Required Technical Courses (44 credits): Credits

7913	Introduction to Environmental Control	4
7916	Environmental Seminar	1
7943	Water Supply and Treatment	4
7945	Equipment and Maintenance I	3
7946	Applied Research I	2
7954	Plant Operations I - Municipal	4
7956	Applied Research II	3
7957	Community Sanitation	3
7958	Equipment and Maintenance II	3
7960	Air Pollution Control I	4
7961	Plant Operations II - Municipal	3
7963	Plant Operations III - Industrial	3
7970	Air Pollution Control II	3
7972	Environmental Administration	4

Required Related Courses (44 credits):

7915	Applied Chemistry I	3
7926	Applied Chemistry II	3
7934	Basic Hydraulics	4
7942	Applied Microbiology	3
7951	Reporting and Purchasing	2
7955	Management and Supervision Procedures	3
8110	Communications	4
8113	Oral Communications	4
8203	Technical Mathematics I	4
8204	Technical Mathematics II	4

8301	Physical Science	3
8307	General Chemistry	3
8308	General Microbiology	3
8501	Field Study/Co-op Ed	1-15

Electives (17 credits):

7964	Plant Mathematics	4
7966	Hazardous Materials	2
7967	Occupational Orientation	2
7973	NPDES Workshop	2
7974	Phosphorus Removal Workshop	2
7975	Basic Laboratory Skills	2
7976	Metal Analysis Workshop	2
8118	Effective Reading	2
8210	Statistics	3
8401	Human Relations	4

Total Required:

105 credits

Surface Mining Operations

Careers

Advancing technology and changing mining conditions have created a need for additional qualified personnel in the surface mining industry. With the present rate of mine expansion, a critical shortage of mine personnel is possible over the next few years.

Ivy Tech's Program

The Surface Mining program supplies the surface coal industry with qualified personnel in the area of coal operation and management. The program is six quarters in length, but will be spread over a 2½ year period of time. Students receive on-the-job training four quarters and are in the classroom for six. After successfully completing the work experience and six quarters of study, students are awarded an Associate in Applied Science Degree.

After the first two quarters, students in this program will be interviewed by several mine supervisors for one of several cooperating work stations in the mining industry. The students will be paid by the mining industry and will become an employee of that company after successfully completing the program and work experience.

The program includes courses in the following areas: mining law, blasting and explosives, mine machinery, operations, reclamation mine planning, and economics of mining. These courses are to be covered along with two 24-week training sessions in an operational coal mine. The result of this program can lead to a first level management position in a coal mine.

Program Levels

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 137 credits

Surface Mining



Surface Mining

Required Technical Courses (116 credits): Credits

7610	Introduction to Mining	5
7611	General Physical Geology	5
7612	Surface Mining Machinery	4
7620	Mining Regulations	5
7621	Mine Maps and Surveying	2
7622	Mine Maps and Surveying Lab	2
7623	Elements of Reclamation	4
7625	Surface Mining Field Study I	6
7626	Surface Mining Field Study II	6
7630	Surface Mine Hydraulics	4
7631	Elements of Spoil Management	4
7632	Equipment Operations Laboratory I	4
7633	Principles of Welding	4
7640	Blasting and Explosives	5
7641	Techniques of Operation Safety and Accident Prevention	4
7642	Electrical Circuits and Systems	4
7643	Economics of Mining and Cost Calculations	4
7644	Equipment Operations Laboratory II	2
7645	Surface Mining Field Study III	6
7646	Surface Mining Field Study IV	6
7650	Coal Preparation Plants	2
7651	Coal Sampling and Analysis	3
7652	Labor Relations	3

7653	Transmission Systems	4
7654	Mine Operational Planning	4
7660	First Aid and Safety Management	4
7662	Coal Mine Supervision	5
7663	Water Drainage and Water Pollution Laws	5

Required Related Courses (21 credits):

8112	Technical Communications	3
8203	Technical Mathematics I	4
8206	Technical Calculus I	4
8209	Trigonometry	3
8222	Trigonometry II	3
8401	Human Relations	4

Total Required: 137 credits

Welding

Careers

Welding is the most common method of permanently connecting metal parts by melting them together. The principal duty of the welder is to control the melting by directing heat from either an electric arc or gas welding torch and to add filler metal as needed.

Job opportunities should be very good for welders in the future. Recent reports indicate that opportunities should be especially good for welders in nuclear power plants, pipelines, and ship construction. Other opportunities may exist in the fabrication and building trades, welding service shops, utility companies, metal manufacturing firms, electric motor manufacturers, and almost all manufacturers who use metal in their products.

Ivy Tech's Program

The Welding program provides instruction for initial employment or upgrading skills. The College offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science Degree.

The program includes courses in the following areas: gas and arc welding, blueprint interpretation, electrical fundamentals, MIG, TIG, metallurgy, and gas fusion and brazing. The courses are presented in various formats such as group or individual instruction and laboratory practice.

Program Levels

Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 66 credits
 Associate in Applied Science: minimum of 111 credits

Welding



Welding

Technical Courses:*

8001	Gas Welding I	3
8003	Gas Welding II	3
8006	Basic Metallurgy	3
8008	Gas Welding III	2
8010	Arc Welding I	3
8013	Blueprint Interpretation I	3
8014	Arc Welding II	3
8015	Arc Welding III	2
8016	Arc Welding IV	3
8017	Arc Welding V	2
8022	Electrical Fundamentals	3
8024	Blueprint Interpretation II	3
8027	MIG Welding I or	3
8030	MIG Class	1
8028	TIG Welding I or	3
8031	TIG Class	1
8029	MIG Welding II or	2
8032	MIG Lab	2
8034	TIG Welding II or	2
8033	TIG Lab	2
8042	Basic Fabrication (Class) or elective	1
8043	Basic Fabrication Shop or elective	2

Related Courses:*

8112	Technical Communications	3
8201	Applied Mathematics I	4

8202	Applied Mathematics II
8401	Human Relations
8406	Employment Orientation

Electives:*

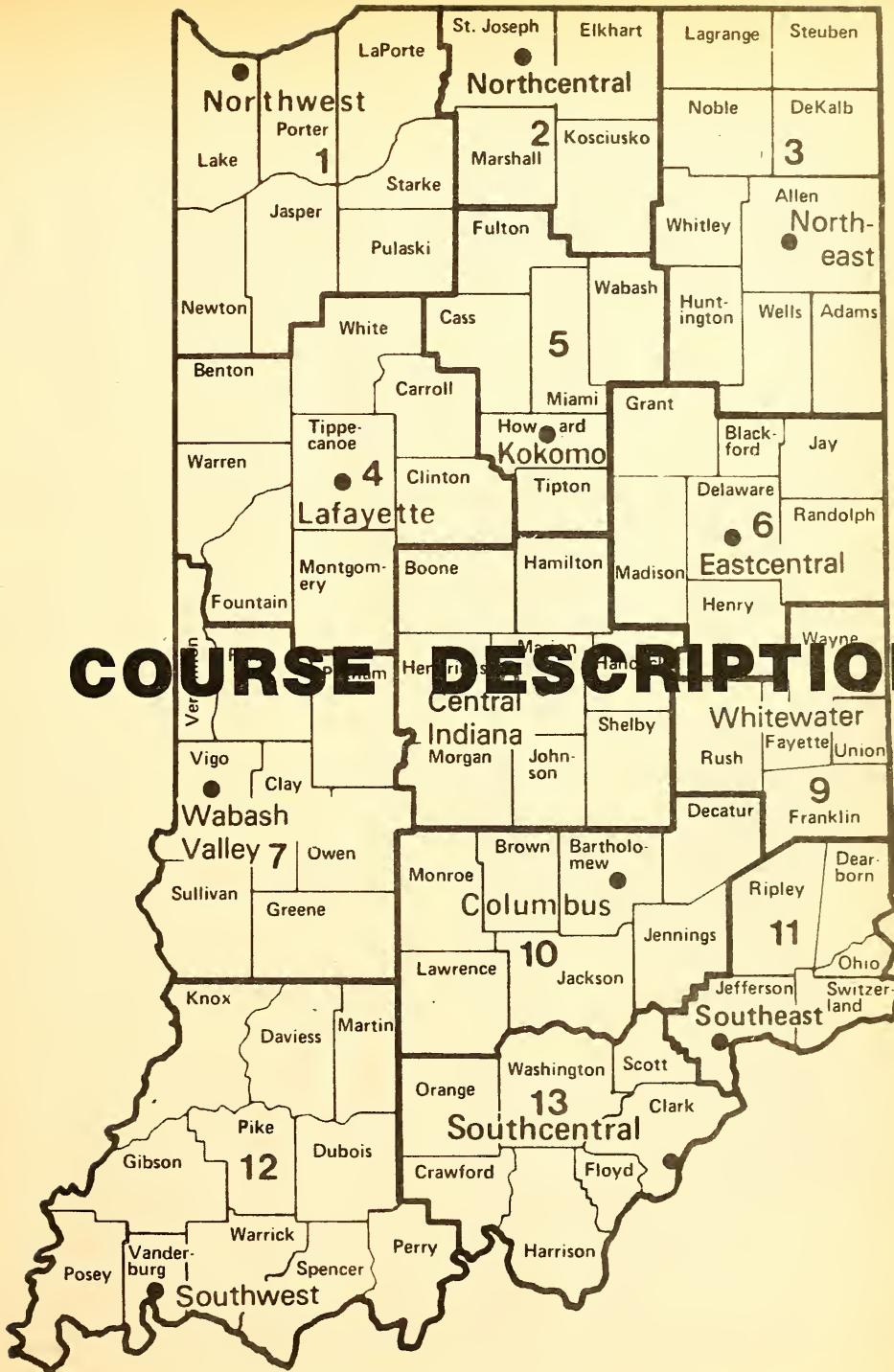
8023	Arc Welding VI	2
8025	Arc Welding Class III	2
8026	Arc Welding Shop III	3
8040	Welding Equipment Maintenance (Oxy & Arc)	3
8044	Welding Equipment Maintenance (Inert Gas)	3
8045	Welding Equipment Maintenance Shop (Inert Gas)	1
8046	Basic Mine Welding (Class)	1
8047	Basic Mine Welding Laboratory	2
8048	OSHA for Welding	4
8049	Production and Resistance Welding Class	3
8050	Production and Resistance Welding Shop	2
8051	Welding Certification I	3
8052	Welding Certification II	2
8053	Basic Pipe Welding I	3
8054	Basic Pipe Welding II	2
8055	Special Welding Processes	4
8058	Industrial Materials	4
8059	Welding Trouble Shooting	3
8060	Welding Trouble Shooting Inspection Shop	1
8061	Shop Practices	1
8067	Welding Codes and Testing Operations	3
8068	Specifications and Estimates	2

Practicum:*

8005	Gas Welding I - Practicum	1
8009	Gas Welding II - Practicum	1
8012	Arc Welding I - Practicum	1
8018	Arc Welding Shop I - Practicum	1
8019	Arc Welding II - Practicum	1
8039	Arc Welding IV - Practicum	1
8081	Arc Welding Shop II - Practicum	1
8082	Welding Certification I - Practicum	1
8083	Welding Certification II - Practicum	1
8084	Arc Welding II - Practicum	1

Total Required: **66 credits**

*The regional counselor will be responsible for arranging the student's schedule. Minimum requirements for the Technical Certificate are 66 credits; Associate Degree — 111 credits. The Associate in Applied Science Degree is offered only in Region 13.



COURSE DESCRIPTIONS



Business Sciences

COURSE DESCRIPTIONS

ACCOUNTING

0110 Accounting Principles I 4

Introduces the fundamental principles, techniques and tools of accounting, presenting the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises; includes an introduction to payroll accounting.

0112 Accounting for Non-Majors 4

Structured for non-accounting majors, the course requires students to analyze financial statements to determine levels of efficiency, company performance, and ratio and trend analysis, in addition to budgeting and capital expenditures and price level affects on accounting.

0120 Accounting Principles II 4

Studies partnership, internal control, notes and interest and departmental accounting, in addition to sales procedures and valuation of receivables, inventories and fixed assets.

0122 Business Law I 3

Includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment, with emphasis placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0123 Business Law-Professional Secretarial Examination 4

Introduces the study of business law to prepare candidates for the Professional Secretarial Examination. Includes contracts and the operation of governmental controls of business, real and personal property, legal instruments, court procedures, sales, product liability and related statutes.

0124 Consumer Economics 3

Includes study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems.

0130 Accounting Principles III 4

Introduces branch operation accounting with further development of skill and knowledge of accounting: journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.

0131 Accounting III - Practicum	1	sumer and producer; determination of price and output; allocation of scarce resources and distribution and income.
An introduction to the fundamental principles of accounting as applied to various types of business. The art of analysis, recording, summarizing and financial reporting is emphasized.		
0135 Accounting & Financial Reporting for Churches	3	
Covers basic principles and processes required for a church financial record and reporting system. Focus is on accounting principles, fund accounting, recording fixed assets and depreciation, investments, budgeting and reporting systems.		
0140 Intermediate Accounting I	4	
Includes intermediate accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and concepts of cost or market inventory valuation.		
0141 Individual Income Taxes	4	
Presents accounting procedure and problems connected with Federal Income Tax Law and state laws for individuals, estates, and trusts.		
0142 Job Order Cost Accounting	4	
Prerequisite: 0120		
Studies job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms.		
0143 Business Law II	3	
Continues Business Law I (0122) with emphasis on topics including bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, surety ship, guaranty and bankruptcy.		
0150 Intermediate Accounting II	4	
Considers intermediate and advanced accounting principles dealing with corporations, temporary investments, long-term investments, special bond transactions, amortization, revaluation of plant and equipment, retirement of plant and equipment, repairs and maintenance, depreciation, natural resources and intangible assets.		
0151 Process Cost Accounting	4	
Studies process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.		
0152 Business Income Tax	4	
Studies accounting procedure and problems connected with Federal Income Tax Law and state laws for corporations.		
0153 Microeconomics	3	
Includes analysis of basic economic principles of supply and demand as they affect individual con-		
0154 Macroeconomics	3	
Includes analysis of national income accounting through study of GNP and components; as well as the operation of the monetary and banking system and a survey of international economic problems.		
0155 Managerial Accounting	3	
Provides understanding of the relationship of accounting records to management decision making, with topics including internal accounting records, the role of data processing and quantitative business analysis.		
0156 Accounting Laboratory	1-6	
Presents a series of planned accounting learning problems and activities designed to accompany the major concepts and theories included in accounting technology courses.		
0157 Payroll Accounting	4	
Presents the accounting aspects as practiced in small to medium-sized firms as well as the larger corporations.		
0160 Intermediate Accounting III	4	
Deals with stockholder's equity, corporate earnings, corporate dividends, statement of change in financial position and financial statement analysis.		
0161 Review Course for Accreditation Council for Accountancy Examination	4	
Prepares a candidate to take the Accreditation Council for Accountancy Examination in accounting. The course will review areas of both financial and management accounting that most frequently appeared on the past examination. The course will review most intermediate accounting topics.		
0162 Auditing	3	
Studies public accounting organization and operation, including internal control, internal auditing, verification of the balance sheet and operating accounts, and the auditor's report of opinion.		
0164 Money and Banking	3	
Studies monetary theory and banking theory as they relate to present-day domestic and international problems, with topics including banking operations, price changes, international monetary relationships and application of monetary and fiscal policy.		
0165 Budgeting	3	
Prerequisite: 0120		
Presents procedures in the preparation and use of business budgets, with particular emphasis as aids in coordinating and directing business operations.		
0166 Introduction to Management	3	
Studies the vital role of management in organiza-		

tions of various sizes, examining the interrelationships among various departmental functions and establishment of lines of authority and responsibility; treats managers' duties relating to communications, motivation and delegation of authority.

0167 Seminar in Accounting

1

Allows the accounting student an opportunity to pursue specific areas of interest at a more advanced level in accounting.

0169 Personal Finance

3

Emphasizes management of individual financial resources to achieve growth and maintenance of personal wealth: home buying and mortgage financing; installment financing; life insurance; securities; commodities and other investment opportunities.

ACCOUNTING

Credit and Finance Option

0171 Principles of Finance I

3

Covers basic principles of business finance as influenced by capital structure and type of ownership; also sources and methods of financing.

0172 Principles of Finance II

3

Continues Principles of Finance I (0171); covers tools of financial analysis and financial management, problems relating to sources of financing, integration of economic theory as applied to business finance.

0173 Consumer Credit

3

Examines consumer credit and social institutions, economic and social aspects and institutions supplying consumer credit; organizes consumer credit cycle into three basic areas of acquiring, controlling and collecting, plus study of fundamental activities of credit cycle in relation to various consumer credit grantors.

0174 Credit Procedures

3

Examines principles and methods of credit administration in mercantile and retail fields, including sources of information, credit policy, credit control, legal remedies, and collection techniques.

0175 Credit Management I

3

Studies occupational opportunities in field of credit, management functions of acquiring cycle of credit, and management functions of control cycle of credit in a seminar discussion/research/project setting: combines lectures, discussions, individual research and project work, with written and oral presentation of findings and results by students.

0176 Credit Management II

3

Studies management functions of collection cycle of credit, credit law, and management of credit operations in seminar discussion/research/project

setting; combines lectures, discussions, individual research and project work, with written and oral presentation of findings and results by students.

0177 Commercial Credit

3

Presents fundamental theory, principles and practices of credit and collection management needed by business involved with operations of credit and collection phases of business enterprise; treats all phases — commercial, consumer and mortgage credit — with special emphasis on commercial credit and short and intermediate term credit. Also relates and applies acquiring and control functions and accompanying collections policies, procedures, and methods to managerial aspect of credit and collections.

0178 Credit and Collection

3

Covers retail credit operation, credit investigations, opening of credit accounts, retail terms and policies and information on retail credit organizations, as approached from both retail and mercantile standpoints; includes study of mercantile credit operations, credit information, analysis of financial statements and methods of collection and follow-up to past due accounts.

0190 Accounting Clerical Procedures

2-8

Prepares student for specific jobs by means of job training and office simulation, covering in depth basic skills and duties for eight office jobs: Purchase Order Clerk, Sales Order Clerk, Inventory Clerk, Accounts Payable Clerk, Cash Receipts Clerk, Accounts Receivable Clerk, Payroll Clerk and Cash Payments Clerk. Credits do not apply to Accounting Technology A.A.S. degree.

SMALL ENTERPRISE AND OFFICE OPERATIONS

0320 Management Principles

3-4

The function and work of managers are described, including management of activities and personnel to best achieve goals. Focus is placed on basic principles for guidance in management work applications.

0321 Office Administration

4

The broad areas of administrative office services and management are covered, including office organization, office site location, office layout and environment, records management, system controls, and office communication services and devices.

0322 Personnel Administration

4

The activities of the personnel administrator are covered with focus on employer-employee relations, job analysis, job evaluation, salary administration, work measurement and standards and performance appraisal.

0323 Business Principles and Organization

3

Includes an introductory study and analysis of our business system as a whole in relation to our economic society; also introduces business ownership, organization, principles, problems, management, control facilities, administration and practices to develop an understanding of American business enterprises and their functions.

0328 Laws Applied to Business

3-4

The various sources of law within a business environment are described, with focus on contracts, the Uniform Commercial Code and the forms of business organization.

COURT REPORTING**0412 Vocabulary Building**

3

Teaches spelling and vocabulary rules for spelling, effective dictionary use and utilization techniques for new vocabulary words in an intensive course.

0421 Machine Shorthand I

5

Introduces basic theory, arbitraries and phrases, and speed in reading notes, both plate notes from the theory book and student's own notes; stresses speed dictation of 40-80 words per minute and dictation for transcription from familiar and new material.

0431 Machine Shorthand II

5

Continues Machine Shorthand I, (0421) with emphasis on completion of basic theory, arbitraries and phrases and speed in reading notes; stresses speed dictation of 60-110 words per minute along with dictation for transcription from familiar and new material.

0432 Speed Building I

1

Stresses development of speed and accuracy from straight copy typing, with minimum exit speed set at 45 net words per minute.

0433 Dictation - Literary I

2

Continues to build machine shorthand vocabulary, with students expected to attain speed of 80-100 words per minute; introduces additional arbitraries, number drills and medical dictation at 50 words per minute.

0434 Dictation - Jury Charge I

1

Consists of dictation of Jury Charge for practice at 90-100 words per minute.

0441 Speed Building II

1

Develops speed and accuracy from straight copy typing, with minimum exit speed for course set at 50 net words per minute.

0442 Dictation - Literary II & Medical I

2

Continues to build machine shorthand vocabulary, with students expected to attain literary speed from

100-120 words per minute; stresses arbitrary and number drills, plus medical dictation at 70 words per minute.

0443 Dictation - Q & A I

3

Places emphasis on taking 2-voice testimony from 90-120 words per minute.

0444 Dictation - Jury Charge II

1

Consists of dictation of Jury Charge to students for practice at 110-120 words per minute.

0451 Dictation - Q & A II

2

Places emphasis on taking 2-voice testimony 110-140 words per minute; introduces three-voice question and answer; how to mark exhibits.

0452 Speed Building III

1

Develops speed and accuracy from straight copy typing, with minimum exit speed set at 55 words per minute net.

0453 Medical Terminology

4

Presents ethics of medicine, professional conduct, and words from Greek and Latin prefixes, suffixes, word roots, and combining forms; also teaches student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and intelligent use of medical dictionary.

0454 Dictation - Literary III & Medical II

2

Continues number and arbitrary drills, with reference books introduced and explained and medical dictation practiced at 90 words per minute; students should attain speed of 120-140 words per minute.

0455 Dictation - Jury Charge III

2

Dictates Jury Charge at 130-140 words per minute.

0460 Dictation - Q & A III

2-3

Places emphasis on taking 2-voice testimony from 130-160 words per minute; 3-voice testimony from 100-130 words per minute.

0461 Transcription 1

2

Gives pre-transcription training necessary for rapid readback and typing transcription practice from student's machine notes; also stresses timed writings and practice necessary for building typing speed and accuracy.

0462 Courtroom Punctuation I

4

Includes punctuation of poorly constructed sentences and reinforcement of rules of punctuation; introduces exceptions used by court reporters, and places emphasis on accurate punctuation of testimony transcripts. (Minimum passing for this course is 85 percent.)

0463 Speed Building IV

1

Develops speed and accuracy from straight copy typing, with minimum exit speed set at 60 net words per minute.

0464 Transcription II	2	0477 Dictation - Literary V	1
Places emphasis on typing from student's own notes for period of five minutes with purpose of typing as accurately as possible while maintaining acceptable rate of transcription speed, with minimum of 20 words per minute required to pass this level of transcription.		Dictates literary material at 160-180 words per minute.	
0465 Business Communications II	4	0478 Dictation - Medical IV, Jury V	1
Improves student's ability to handle communications in business and industry, placing emphasis on both oral and written communication problems, teaches the psychology behind successful business correspondence as well as writing various types of business correspondence.		Dictates Jury Charge and Legal Opinion for practice at 170-180 words per minute; medical dictation for practice at 130 words per minute.	
0466 Dictation - Jury Charge IV and Legal Opinion I	1	0479 Dictation - 4 Voices Q & A	1
Dictates Jury Charge and Legal Opinion from 150-160 words per minute.		Presents mock trials consisting of 4 voices for dictation and transcription.	
0467 Dictation - Literary IV and Medical III	2	0481 Transcription V	3
Dictates literary material 140-160 words per minute; medical material at 110 words per minute.		Places emphasis on students typing from their notes for a period of 5 minutes, typing as accurately as possible while maintaining an acceptable rate of transcription speed; minimum speed, 35 words per minute.	
0470 Dictation - Q & A IV	2	0482 Speed Building VI	1
Places emphasis on taking 2-voice testimony 150-180 words per minute; practices 3-voice testimony 140-170 words per minute; also gives practice at 4-voice testimony.		Develops speed and accuracy from straight copy typing, with minimum exit speed set at 70 net words per minute.	
0471 Transcription III	3	0483 Transcription VI	3
Places emphasis on students typing from their own notes for a period of five minutes as accurately as possible while maintaining an acceptable rate of transcription speed (speed ranges 25-39).		Places emphasis on students typing from their own notes for a period of 5 minutes as accurately as possible while maintaining an acceptable rate of transcription speed, with minimum of 40 words per minute required to pass course.	
0472 Courtroom Punctuation II	4	0484 Dictation - Q & A VI	3
Continues Courtroom Punctuation I with emphasis on punctuation of Jury Charges and Legal Opinions. (Minimum passing for this course is 85%).		Places emphasis on taking 2-voice testimony 190-225 words per minute; practices 3-voice from 160-190 words per minute; also gives practice in 4-voice testimony. Teaches fundamentals of dictating notes into tape recorder.	
0473 Speed Building V	1	0485 Dictation - Medical V & Literary VI	2
Develops speed and accuracy from straight copy typing, with minimum exit speed set at 65 net words per minute.		Requires students to attain literary speed of 180-200 words per minute, with medical dictation practices at 140 words per minute.	
0474 Transcription IV	3	0486 Dictation - Jury Charge VI	2
Places emphasis on students typing from their own notes for a period of five minutes as accurately as possible while maintaining an acceptable rate of transcription speed; minimum of 30 words per minute required for completion of course.		Dictates Jury Charge for practice at 190-200 words per minute.	
0475 Courtroom Procedures	2	COMPUTER PROGRAMMING	
Presents simulated courtroom experience in the form of mock trials. Guest lecturers also provide information for students.			
0476 Dictation Q & A V	3	0510 Fundamentals of Data Processing	5
Places emphasis on taking 2-voice testimony from 170-200; practices 3-voice testimony from 140-170, and also gives 4-voice testimony.		Provides general introduction to data processing and programming, with emphasis on electronic data processing; includes development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.	

0511 Fundamentals of Programming	5	and the practical applications of Job Control Language used in OS installations.
Provides basic introduction to computer programming, including basic concepts, procedures and language.		
0512 BASIC Programming	5	
Introduction to a computational type of problem oriented language; use of arithmetical expressions, conditional control, iteration techniques, input-output specifications, tables and subprograms to solve problems which involve computation.		
0513 Fundamentals of Data Processing - Practicum	1	
This course is supplemental to Fundamentals of Data Processing (0510).		
0520 COBOL Programming Fundamentals	5	
Provides working knowledge of programming language COBOL and application to business data processing; student gains proficiency in solving basic business problems with COBOL language.		
0521 Practical Computer Operations	5	
Teaches actual computer operations and proficiency in handling and setting up complex disc and tape file runs. Student learns to run book and message control functions and to read job descriptions and flow charts.		
0522 Problem Solving Fundamentals	3	
Familiarizes student with necessary techniques for efficient solution of computer programming logic problems, utilizing logic examples and exercises to develop confidence and ability to solve programming problems.		
0530 Advanced COBOL Programming	5	
Continues COBOL Programming (0520) with emphasis on complex file handling techniques and use of advanced COBOL extensions. Develops higher level of COBOL proficiency, working knowledge of advanced features and techniques through laboratory experience.		
0531 Operating Systems	5	
Studies computer operating systems, purposes, structure and various functions, providing general understanding of how comprehensive sets of language translators and service programs operating under supervisory coordination of integrated control program form total operating system of a computer.		
0532 Job Control Language	4	
Students are given in-depth knowledge of basic and intermediate level control language oriented toward the multi-programming versions of OS, MFT and MVT. Focus is on positional parameters, keyword parameters, operands, general formats, coding rules		
0540 Systems Analysis and Design	4	
Studies functions and techniques of systems analysis, design and development, including science analysis, system flow charting, data collection techniques, file design and management determination of processing and equipment requirements. Course stresses communications between user and data processing department, plus reporting methods; case studies analyze problems that may be encountered and their possible solutions.		
0541 COBOL Programming III	5	
This course will familiarize the student with very advanced concepts in COBOL programming such as programming with direct-access devices and using the COBOL SORT feature Other topics will be included from the text on structured programming, documentation and further exposure to job control language.		
0551 Business Programming Applications	5	
Studies advanced business programming applications with topics relating to distribution, manufacturing, banking and insurance corporations, course supports applications including billing, accounts receivable, sales analysis, payroll, inventory and cost through brief sketch of manual methods and detailed discussion in terms of computer systems, plus exercises in programming.		
0560 Data Communications	4	
Develops familiarity with modern data communications techniques as applied to data processing; teaches vocabulary and techniques common to remote processing, time sharing, data transmission, etc.		
0568 BASIC Language Programming	4	
The recent popularity of micro and minicomputers has led to a significant increase in the use of the BASIC Language. The course assumes no previous background in either computers or programming. Topics include terminology, common input/output devices, computer software, flowcharting, rules of the BASIC language, arithmetic and string operations, input and output operations, program control statements and programming debugging and testing techniques.		
0569 BASIC Assembly for Microprocessors	4	
Introduces BASIC language microcomputers including reading and writing programs.		
0570 Assembler Language Fundamentals	5	
Familiarizes student with machine-oriented, low-level programming language (language taught		

depends on type machine access, concentrates on instruction set used or commercial application); laboratory includes coding, debugging and testing of assembler language programs.

0571 Survey of Business Data Processing 3

Provides supervisory and management level student with understanding of scope and significance of data processing, including punched card unit record equipment, electronic data processing equipment and basic computer concepts.

0572 FORTRAN IV Programming Fundamentals 5

Introduces computational type of problem-oriented language; utilizes arithmetical expressions, conditional control, iteration techniques, input-output specifications, tables and subprograms to solve problems involving computation.

0573 RPG II Programming Fundamentals 5

Covers use of compiler language RPG (Report Program Generator) as means of solving business problems, including areas of multiple input and/or output, use of business mathematics in solution of business and other problems; instills productivity with RPG as compiler language.

0575 Topics in Data Processing I 5

Includes topics of current interest in data processing or special individual student projects in data processing for the advanced student (projects, research reports and other assignments may vary to fit individual needs and specific needs of Ivy Tech regional institute).

0576 Advanced Assembler Language 5

Continues Assembler Language Fundamentals (0570) with emphasis on disc and tape programming techniques.

0577 Topics in Data Processing II 5

Continues Topics in Data Processing I (0575).

0579 Advanced RPG/II Programming 5

A continuation of RPG II Programming Fundamentals (0573).

0580 Structured COBOL For Programmers 5

This course is designed to provide an understanding of the theory of structured design and structured programming techniques. It will emphasize through laboratory practice how these concepts contribute to the development of more efficient computer programs. Topics include hierarchical organization, module level design, Top-down and Bottom-up design, structured walkthrough and "Ego-less" programming.

HOTEL-MOTEL MANAGEMENT

0710 General Food Theory I 4

An introduction to the food service profession with emphasis on food production and management, personnel development and organization. Topics include: sanitation, food spoilage, regulations and standards, equipment usage, menu and recipe planning, refrigeration and food preparation.

0711 Introduction to Hospitality Management 4

Traces growth and development of the lodging industry from early industry, from early inns to modern high rise and commercial hotels and highway motels, stressing opportunities and future trends in the industry. Also reviews organization and nature of the business, including sales promotion, guest relations, guest room facilities, space utilization, food and beverage facilities, accounting records and financial consideration, as well as administrative control.

0712 Front Office Procedures 4

Introduces front office principles required in today's lodging operations and presents practical problems to enhance the learner's knowledge of front office operations. Develops areas of human and public relations responsibilities of the front office, salesmanship, cashier's charges and posting machines.

0713 Introduction to Volume Food Preparation 5

Presents fundamentals of cooking applying to all food preparation and requisite to progress in the cooking field; includes personal hygiene, sanitation and safety, basic menu writing and balancing meals; also knowledge needed for progressive steps in preparing completed meals.

0714 Introduction to Volume Food Service 3

Presents steps taken in getting completed meal to customer in fastest and best manner while still retaining quality; includes various types of table setups and service—American, French, Russian, etc.; stresses waiter training, busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation, and proper storage of all portable equipment.

0715 Cooperative Education I 12

Enables students to correlate principles and concepts presented in classroom to food preparation in practice through cooperative experience in food service establishments; includes experiences in Sanitation Function, Pre-prep Area of Kitchen, Broiler/Grill, Cold Preparation, Storeroom and Purchasing, and Banquets/Catering.

0721 Hotel-Motel Supervision	3	0730 General Food Theory II	4
Assists the student in learning supervisory skills and organization methods for maximizing the employer's day-to-day work performance.		Second part of the food production courses designed to acquaint the student with two of the basic food groups, including meat, fish, poultry and dairy products.	
0722 Apartment Management and Leasing	3	0731 Basic Cooking Methods	4
Emphasized responsibilities of both landlord and tenant in apartment, townhouse and permanent rental properties in general; also condominiums. Includes both small and large complexes, examining business and maintenance details and role of different personnel in each setting.		This is the third in a series of courses in food production. The student will become knowledgeable in the 14 basic forms of food production.	
0723 Convention Management	3	0733 Food & Beverage Management & Service	4
Examines cooperative relationship between successful hotel and motel property sales in small and large properties; emphasizes methods of convention sales.		Provides basic understanding of principles of food production and service management, reviewing sanitation, menu planning, controls of cost and labor, and purchasing, storage and merchandising of food and beverages; also discusses problems of labor shortages, convenience foods and changes in consumer tastes.	
0724 Financial Management and Control	4	0734 Nutrition	4
Studies special application of accounting principles to the hospitality industry; also, business in food and lodging industry; methods for keeping track of the business for creditors, owners, and the government; payroll control with special emphasis on those tax laws which apply only to this industry; expense control and other ways to achieve profit-making management.		Presents determination of individual requirements of energy, protein, mineral and vitamins, foods as source of daily requirements and relationship between food and nutrition and optimal physical fitness.	
0725 Institutional Management	3	0735 Volume Food Preparation	5
Studies management problems unique to institutions - boarding schools, professional sport training camps, summer camps, hospitals, extended care facilities, nursing homes, retirement facilities, mental health facilities, prisons - in which students develop an awareness that basic needs of hospitality industry are the same. Guest lectures and field trips to the institutions highlight this study.		Introduces methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, mathematics used to determine proportion costs to determine profitable selling price; also includes preparation of volume foods, methods of retaining top quality in prepared foods until dispersion, timing of activities to have products ready just prior to service and limitation of menu items in this type of food service.	
0726 Property Management	3	0736 Volume Food Service	3
Covers all phases of property management, emphasizing first impression, staffing, training, capital investments, cost analysis, rentals and renovation.		Presents methods used to dispense volume foods, cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.	
0727 Tourism	3	0740 Cooperative Education II	12
Provides comprehensive study of tourism principles, practices and philosophies, offering practical and realistic education in the business of tourism, illustrating how and why various components of tourism integrate with other segments of the industry.		Enables student to correlate principles and concepts presented in classroom to food service in practice through situational review; includes closely supervised observation and assistance in Ala Carte Dining, Volume Feeding, Breakfast, Lunch and Dinner preparation and service, Banquet Service of Cooperating Food Service establishments.	
0728 Hotel-Motel Seminar	3	0742 Food & Beverage Purchasing and Control	4
Provides an opportunity to examine special problems or topics of current interest through group discussions and guest speakers.		Studies in detail major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages; outlines essentials of effective	
0729 Restaurant Operations	4		
Gives the student an overview of restaurant operations through hands-on experience in a specialty restaurant setting.			

food and beverage control, while establishing system for determining sale values for food and beverages.

0744 Sanitation

4

Details fundamentals of sanitation for food service and general cleaning practices, environmental sanitation and scientific principles underlying good sanitation practices; also includes personal hygiene and importance of sanitation from economic, legal and moral point of view.

0752 Sales Promotion

4

Demonstrates how to develop a marketing plan for any size operation and shows how to tie all of the departments of a hotel operation into a coordinated team; emphasizes organization and functioning of sales department, sales tools, techniques, advertising, and types of markets.

0753 Hotel-Motel Law

3

Creates an awareness of responsibilities and rights which the law imposes upon and grants to the innkeeper and illustrates the consequences caused by failure in those responsibilities; also discusses attitude of the courts toward the innkeeper involved in litigation.

0754 Food and Beverage Management and Services

3

Covers entire food and beverage operations from purchasing, receiving and storage to preparation and service.

0755 Food Production Principles

3

Examines the responsibilities and the techniques of quality and quantity food production. In addition, this course includes the classification of food in meat and vegetables.

0756 Food and Beverage Purchasing and Service

3

Studies in detail the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shellfish, meats and alcoholic beverages.

0760 Hotel-Motel Maintenance I

3

Examines organization of maintenance and engineering department, discussing plumbing, heating, ventilation, refrigeration and air conditioning and electrical systems; vertical transportation, structural maintenance, painting, landscaping, contracts, communication, acoustics, fire protection and maintenance of kitchen equipment.

0762 Supervisory Housekeeping

4

Provides introduction to fundamentals of housekeeping management, stressing employee training, record keeping, health and safety, cost control and executive housekeeper responsibilities.

0763 Hotel-Motel Maintenance II

3

Studies the field of maintenance and engineering on an advanced level going beyond the substantive area covered in Maintenance I; provides technical information to establish effective preventive programs as well as maintenance procedures.

0799 Waitress-Waiter Training

2

The course is designed to augment the other course offerings in the Hotel-Motel Management program.

INDUSTRIAL MANAGEMENT TECHNOLOGY

0901 Quality Control Concepts and Techniques I

4

Designed to present the total quality function in industry. The emphasis of this course is on the latest quality control concepts in response to modern manufacturing requirements.

0902 Quality Control Concepts and Techniques II

4

A continuation of Quality Control Concepts and Techniques I (0901). The emphasis of this course is on the latest quality control techniques with regard to current technological developments.

0903 Quality Control Engineering Principles and Techniques

4

This course presents the latest principles and techniques of quality engineering for the management, engineering, economics, production and assurance of quality at the hardware, processing and systems levels. Particular emphasis is placed on the fundamentals of quality assurance and process control for effective and economical control of product and process quality.

0904 Statistical Concepts and Techniques

4

Presents a wide variety of topics involving quality control statistical applications, including: frequency distribution, probability theory and applications, and sampling techniques.

0905 Quality Control Engineering Theory and Applications

4

Presents the latest theory and applications of quality engineering for assurance and verification of process and product quality at the hardware, processing and systems levels. Particular emphasis is placed on statistical analysis, cost analysis, laboratory experiments and test and case problem solving applications.

0906 Basic Blueprint Reading

3

This course is designed to prepare students to read and interpret all types of blueprints and drawings common to manufacturing, including dimensions, shapes, machining operations, fabrication, and

assembly. Students will be expected to apply basic mathematics in solving shop problems.

0907 Reliability Objectives 4

This is a survey course presenting concepts basic to modern reliability requirements; particular emphasis is placed on practical applications within manufacturing process and production operations.

0908 Introduction to Nondestructive Tests 4

Presents an overview of the relationship of nondestructive testing in the total quality function and the advantages and limitations of various test methods.

0909 Mechanical Metrology 4

This presents instruction and laboratory experiments in the use of mechanical test and measurement equipment employed in quality control.

0910 Electronics Quality Control 2

This course is designed to examine the quality function specifically within the electronics industry.

0912 Manufacturing Organization I 3

In-depth study of the typical manufacturing organization for the first-line supervisor: examines in detail the duties and responsibilities of various functions that make up the manufacturing organization and studies interrelationships of the functions; review organization principles as they apply to the manufacturing operation; and develops some of the basic tools of managerial decision making and applies them to typical case problems.

0913 Techniques of Supervision I 3

Covers employee development, with material directed toward the responsibility of any supervisor, including responsibilities of the supervisor functioning within an organizational structure; relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees and evaluation of employee performance.

0915 Electrical Metrology 4

This course presents instruction and laboratory experiments in the use of electrical test and measurement equipment employed in quality control.

0916 Procurement Quality Control 4

This is a study of the quality control principles and functions of procurements involving inspection techniques and inspection tools and records.

0917 Reliability Techniques 4

The course is designed to develop an understanding of the application of reliability techniques in obtaining or improving reliability analysis.

0918 Machine Guarding Techniques 3

This course is designed to inform the student about machine guarding principles and techniques.

0919 Power Source Hazards 3

Methods of grounding electrical equipment.

0920 Evaluation and Control of the Occupational Environment 4

Detection, evaluation and control of chemical, physical and biological health hazards, including quantitative sampling and analytical techniques for dusts, gases, vapors, noise, nonionizing radiation and other occupational hazards.

0921 Principles of Industrial Safety 3

Covers day-to-day responsibilities of management and supervision toward attaining an accident-free organization, with emphasis on first aid, fire prevention, control, starting and stopping of machines, accident investigations and other preventive measures; also covers methods of advertising good safety practices, rules of plant protection in relation to safety and OSHA.

0922 Principles of Traffic Safety 3

The course includes a study of the principles of traffic control and automotive transportation problems. It also includes a review of traffic safety research and remedial approaches to the solution of this national problem.

0923 Techniques of Supervision II 3

Develops necessary skills needed for effective management of people, with various topics developed through group discussions, case studies, and in-basket situations.

0925 Manufacturing Organization II 3

Continues Manufacturing Organization I (0912), studying quality control, research and development, marketing, production, and inventory control, personnel, and maintenance functions; also examines forms of ownership, analysis of financial data, capital investment considerations, and budgeting.

0930 General Industry OSHA and First Aid 3

This course is designed to give the student a knowledge of the Occupational Health and Safety Act by a study of the Act, a knowledge of hazard recognition by a study of the OSHA standards, and a knowledge of First Aid techniques by use of the American Red Cross Multi-Media course.

0931 Time and Motion Study 3

Studies time and motion in the practical application area using industrial practice as basis for the establishment of rates.

0932 Safety Regulations 3

Studies recording and maintaining an accident severity rate, correctly submitted workmen's compensation claims, insurance claims and managing a safety program in compliance with laws or contractual agreements.

0940 Quality Control

Places emphasis on principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time, with the purpose of the course to provide unit managers and supervisors with an understanding of the use of scientific quality control. Topics include vendor-customer relationships, sampling inspections, process control and tests for significance, with emphasis on an individual being able and qualified to determine what type of quality control is best for a particular industry.

0941 Labor Relations

Explores development and application of labor laws and practices that form the basis of modern day industrial relations, with topics including history and development of organized labor, federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances and arbitration.

0942 Purchasing and Inventory Control

3-4

Provides practical approach to procurement with regard to price, quality, quantity, and delivery, with personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards discussed in detail, and the role of the purchasing section or department, as a member of management's value analysis team, studied in depth.

0943 Storeroom Operation and Warehousing

4

To provide comprehensive instruction methods and activities involved in all phases of Storeroom Operation and Warehousing, so as to equip the student with the knowledge and skills which will enable him to efficiently function in all phases of modern professional storeroom and warehousing work.

0950 Manufacturing Costs and Value Analysis

3

Applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development and manufacturing without affecting quality; differs from cost control in that it is directed toward analyzing value, not cost.

0951 Production Planning and Control

3

Brings the range of concept and techniques to useful application in practical design of production planning, inventory control systems and follow-up.

0952 Work Analysis and Improvement

3

Demonstrates how analysis of work methods and their improvement is the responsibility of every effective manager and supervisor whether specifically

charged with it or not; develops a perspective or work simplification philosophies and practical tools for both scientific analysis and implementation of work improvement; investigates importance of job enrichment and ability to effect positive change through actual on-the-job assignments whenever possible.

0954 Materials Handling

3

Studies applied stresses and quality controls of industrial materials while handling and storing, shelf life of certain materials, weight and mass configuration and vendor's materials specifications.

0956 Managerial Cost Accounting

3

Studies development of standard cost systems, budgets and use of budgets as control devices; emphasizes methods of presenting cost data and interpreting this data for managerial decision making.

0960 Economics of Industry

3

Covers fundamental economics and basic principles of business systems in everyday terminology, with emphasis on practical economics as opposed to theoretical; includes various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

0961 Plant Layout and Process Planning

3

Studies factory planning covering layouts for small and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment, emphasizing the most efficient arrangements of work areas to achieve lower manufacturing costs; includes principles, practices as well as tooling determination, operational sequence, setup and operational time.

0962 Traffic and Transportation Management I

3

Presents development of personnel associated with or working in transportation and traffic management fields, covering technical developments and other phases of transportation organizations; includes discussions covering the American transportation system, federal regulations, freight traffic territory, freight classification, principles of freight rates and tariffs, shipping documents and their application, special freight services and a study of freight claims.

0963 Manufacturing Processes I

3

Shows how knowledge of present manufacturing processes is of extreme importance to technicians engaged in industry, with instruction dealing with technical fundamentals of important manufacturing processes, industrial materials and the modern machine tools necessary for processing these materials.

0964 Industrial Assembly Techniques

3

Studies methods of assembly, fasteners, the uniqueness of various assembly materials, metallurgy, plastics, and modern composition.

0967 Drafting and Manufacturing Standards

3

Includes drafting theory and practice with special consideration given to standard practices of dimensioning, tolerancing and notations of tooling components such as proper practices of revolving out of position, line elimination, sectioning and other related areas.

0968 Case Problems in Management

4

Requires the student to pull together all of the quantitative and qualitative skills developed in the program and apply them to the solution of specially designed case problems involving planning, leadership, control and financial analysis functions — a capstone course in the Industrial Management program.

0970 Personnel Management

3

Shows how effectiveness of personnel function is as dependent upon the managers who use or misuse it as it is upon the personnel staff itself, with participants in the course developing a perspective on specific personnel functions and skills to deal more effectively with personnel departments. Topics include manpower planning and development, job descriptions and analysis, employment recruitment, selection and placement, promotions, transfer, separations, wage and salary administration, etc.

0971 Manufacturing Processes II

3

Identifies manufacturing processes and the materials as to design, specifications, facilities and economics, through visitation of various manufacturing concerns.

0972 Traffic and Transportation II

3

A continuation of Traffic and Transportation Management I (0962).

0973 Training for Results

3

Develops a realistic perspective of training as resource for the organization and provides participants with skills to develop and implement effective training, and topics including the nature of learning, concept teaching, creating a motivating learning atmosphere, the place of audio-visual aids and their use, planned versus spontaneous learning, rote teaching, mnemonic devices, learning curves and learning as problem solving. Participants test concepts presented with classroom training assignments and will be encouraged to validate them based on their own experiences.

0974 Conference Leadership

3

Shows how sound conference leadership requires a good deal more than subject knowledge and public speaking skills, and how the leader must also be an effective manager capable of drawing on and developing the resources of all conferees. Course

assists participants in developing their roles as organizers, facilitators, controllers, summarizers, speakers, problem definers and problem solvers, with individualized conference leading experiences allowing for pulling together the concepts from previous courses and developing new insights for utilization of human resources.

0975 Management Information Systems

3

Advanced seminar develops greater perspective on quantitative skills and their role in effective management and supervision; participants develop working knowledge of various concepts and applications of quantitative business management information systems, with special emphasis on understanding the role of information system persons and developing working relationships with them. Topics include the systems approach to problem identification and solution, information and the management process, system analysis and design and a variety of other management systems. Course develops highly interactive atmosphere using actual organizational examples.

0976 Organization Structure and Change

3

Shows how knowledge without skills for implementation is as useless to most organizations as is change for the sake of change; investigates organizational structures and presents techniques for implementing planned change that will enhance the organization rather than merely destroy its structure; provides managers and supervisors at all levels with better understanding of the concepts of change and the practical skills to cope with both planned and unplanned change.

0977 Industrial Supervision Seminar

3

Advanced seminar provides participants with unique opportunity to explore a variety of leadership styles in light of their own experiences, establishing a testing ground to check effects of various styles on others and a low-risk atmosphere to develop alternative leadership patterns for each individual.

0980 Case Problems in Labor Relations

3

Provides student with briefs of both sides from actual arbitration cases from which comes a decision based upon the data provided. Student decisions are discussed in class and actual decisions by the arbitrators reviewed to reinforce major points used by arbitrators in deciding cases.

0981 Transactional Analysis for Managers

3

Examines concepts of Transactional Analysis as they apply to interpersonal communication and human motivation in the industrial workplace, developing in students a basic understanding of TA and skills in using the language, tools and techniques of TA on the job.

0982 Management by Objectives 3

Investigates practical uses, values and problems of MBO with participants developing company, departmental and individual objectives and determining how to constructively implement them, with emphasis on MBO as a tool for management rather than management a tool for it.

0983 Time Management 2-3

Aids supervisors and other interested personnel who desire to manage the business day more effectively, including effective strategies for time management and concepts of time behavior patterns. Participants engage in specific class exercises involving scheduling and allocation of time, identifying and handling time wasters, dealing with interruptions and planning for getting more from the working day.

0987 Construction Safety and Health 3

An introduction into construction industry operations and hazard control. This includes a discussion of site clearing, demolitions, excavation, building and highway construction. Special consideration is given to planning a safety program in the construction industry.

0988 Radiological Safety and Hazard Evaluation 3

State and Federal regulations concerning radioactive materials. Radiation safety as applied to accelerators, nuclear reactors, and radioactive byproducts. Methods of analysis applied to computation of biological radiation dose rates from various sources. Radiation effects on physical systems, as well as accidents involving radiation are considered.

0989 Occupational Disease Control 3

A study of environmental energy and chemical hazards including gases, vapors, fumes, dusts and mists. Also stresses the importance of protective clothing and equipment when physical corrections cannot be made. The course includes basic concepts of chemistry and physics that are fundamental to the control of chemical and energy hazards. The course also includes the principles of ventilation control.

0990 Process Consultation 1

Process Consultation is an organizational development tool. This course seeks to develop in the student the skills required to understand and improve the informal relationships, the traditions and the culture of an organization. The issues to be examined in this context include: communication, member roles and functions, group problem solving and decision making, group norms and group growth, leadership and authority and intergroup cooperation and competition.

0991 Management of Conflict 1

This course is designed to examine conflict on three

levels: interpersonal, small group and intergroup. Students will study the nature of conflict at each level and examine various models for successfully resolving conflict. Each student will complete a conflict management survey instrument to determine their own personal conflict management style.

0992 Powerplay. 1

The students participate in an open-ended simulation which is designed to develop skill and confidence in exerting power so that they may more effectively achieve their personal and social goals. Students will examine their own values regarding power, and then practice planning, analyzing and using power. They do this as individuals and as teams using three power strategies: negotiation, coercion and collaboration, and the tactics that go along with them.

0993 Team Building 1

Team building is an organizational development tool. The students will learn that the basic building blocks of a successful organization are groups (teams) and that the basic units for change are groups rather than individuals. Three types of teams and the models for building them will be studied. Students will also study the characteristics of good and poor work teams, the four stages of developing them and the conditions necessary for successful team building.

0994 Environmental Health I 4

In this first section of a two-part study, the study will deal with the recognition of specific environmental factors or stresses making surveys for each type of environmental hazard and the measurement equipment used in such surveys.

0995 Operational Workplaces 3

A study of standards for floors, walkways, ramps, stairs, ladders and excavations with a view of eliminating hazards which can cause falls and other types of accidents.

0996 Disaster Control 3

A study designed to consider the actions before, during and immediately after an emergency occurs. This includes plans for the protection of people, equipment and plant facilities during emergencies, as well as the broader aspects of the protection of the community of larger geographical areas.

0997 Environmental Health II 4

The second part of the Environmental Health I (0994) enters into the field of toxicology; control of environmental hazards, methods and anatomy, hazards, monitoring and protection.

0998 Noise Pollution Control 3

This course is designed to inform the student of the effects and control of noise in the industrial environment. The following areas will be explored: defin-

tion of noise, measurement of noise, noise and hearing. Federal standards, elements of sound and instrumentation as related to sound and noise.

0999 Chemistry of Hazardous Materials 4

An introductory study into the chemical makeup of and principal dangers inherent in potentially hazardous materials. These materials include compressed gases, combustible and flammable liquids, explosives, blasting agents and corrosives.

MARKETING TECHNOLOGY

1112 Introduction to Business 4

This is a basic business course, an overview of business operations, including management, marketing, production, finance, accounting, data processing, legal structure and economics.

1114 Marketing I 4

Introduces marketing goods and services, with attention paid to marketing mix.

1115 Sales Techniques 4

Overview selling and applied selling skills, with work of salesman and psychology of selling given academic coverage; emphasizes selling skills through application of programmed selling situations. A dual purpose course.

1116 Marketing II 4

Continued Marketing I (1114), utilizing the case study method to apply basic business and marketing knowledge, concepts and principles.

1126 Principles of Wholesaling 4

Studies wholesaling within the marketing distribution structure, including a marketing overview of designing and management channels of distribution of which wholesaling is one part. Focuses on the wholesale market and wholesaling middleman, on the interrelationship with manufacturers and retailers, and on the activities incident to the sale of products for resale or business use.

1134 Sales Management 4

Focusing on the role of the sales manager, principally the leadership function. Course demonstrates personal selling as the major promotional method used in the American economic system to achieve the primary marketing goal of profitable revenue; includes building a sales team, judging sales performance, territorial management, sales recruiting and interviewing techniques, training and developmental activities, as well as managing the environment in which the selling effort takes place, principally the field sales office, including sales support and sales liaison operations.

1135 Principles of Retailing 4

Studies retailing concepts and practices, with emphasis on retail merchandise planning, buying, pricing, promotion, and controlling activities in

established retail operations, with attention to managerial and operational skills needs most demanded by merchant retailers.

1136 Physical Distribution 4

Studies the physical flow of products and the operation of efficient flow systems, with emphasis on economics of transportation and the rate, traffic service and coordination problems of transportation systems.

1137 Buying and Inventory Control 4

Coverage is provided on the decision and skill requirements related to purchasing of products and services for business, including the tasks of procurement, negotiation, transportation and inventory management.

1140 Real Estate Brokers and Salesmen 4

An introductory course taught in accordance with the guidelines established by the Indiana Real Estate Commission. Topics include: property description, marketing real estate, licensing, financing, contracts, zoning, closing procedures and property management.

1141 Appraising the Single Family Residence 3

An introduction to the fundamentals and techniques of real property valuation. Focus is on the theory and application of the three basic techniques of real estate appraisal.

1147 Principles of Advertising 4

Provides broad coverage of advertising as key element in promoting goods and services in the marketplace, with focus on advertising media and media selection, development of advertising copy strategy, advertising regulations and organization of advertising functions and activities.

1148 Principles of Insurance 4

Introduces the risks faced by business firms and how they might be handled, including property, liability and personnel losses, with attention to insurance contracts and their uses, of individual life, health and pension insurance, as well as public policy, including government regulations and social insurance programs.

1149 Condominium and Cooperative Association Management 4

A basic course on community association management particularly directed at condominium management. Includes survey of definitions of condominium, Indiana Horizontal Land Act, selecting type of management and the professional manager and self management, insurance, governing documents, and governing bodies and committees.

1150 On-Site Resident Management 4

The course is a comprehensive course for on-site (resident) managers. Practical information and time

tested methods that will enable resident managers to make sound management decisions are examined, along with established procedures for implementation.

1151 Introduction to Public Relations 4

This course provides a broad coverage of the public relations field to acquaint students with the role of public relations in business and industry, non-profit organizations and government. It will examine the goals and benefits of public relations, the tools of the public relations practitioner, and principles and trends of the field.

1152 Real Estate Brokerage Procedures 3

A highly concentrated course designed to provide occupational information in the following areas specifically for brokers: real estate instruments, basic elements of real estate values, deeds and contracts, leases, property management and real estate financing, legal and governmental aspects of real estate, and arithmetical functions. Students sit for the Indiana Real Estate Broker's Exam as a course requirement.

1156 Advanced Sales Techniques 3

The student studies and applies selling skills important to occupational success, including probing, supporting, overcoming objections and closing; also focuses on techniques to counsel and train others to improve their selling skills.

1157 Entrepreneurship 4

Explores primarily small business operations for the self-employed, with coverage applicable to the generalist administrator employed in a small business enterprise; includes entry into small business, whether new, buy-out or franchise, form and structure of the business, financing and tax considerations, including control through accounting and records including hiring, training and getting efficient operations through others, insurance and other business hazards, government regulations and doing business with the government.

1160 Domestic Budgeting 2

The course is designed to appeal to a wide range of persons, from individuals just beginning to live on a budget (newlyweds, college students, etc.) through people changing to a fixed income situation. The content of the course may not appeal to one interested in completing the Marketing program.

SECRETARIAL-ADMINISTRATIVE

1207 Office Machines Brush-Up 2

Enables students who have had previous training and/or experience in operating general office machines and have not actively used machines for a period of time to reacquaint themselves with machine operation and increase their production efficiency with the machines. The machines to be

covered include: adding machines, calculators, reproduction machines such as mimeographs, spirit duplicators, offsets and copiers, and transcription machines.

1208 Refresher Shorthand 2

The purpose and objective of this new course is to bring old, unused shorthand skills to an employable level once again. The course will have three areas of skill development: speed, theory and transcription.

1209 Refresher Typewriting 2

The purpose and objective of this course is to bring old, unused typing skills to an employable level. The course will have three areas of skill development: speed and accuracy, business letters and tabulation.

1210 Shorthand I 4

Introduces symbol, A B C, or machine shorthand with special emphasis on basic theory, brief form, and speed in reading from plate notes or machine notes; introduces dictation with emphasis on writing shorthand outlines or mastery of the machine keyboard.

1211 ABC Shorthand 4

This course provides an alternative shorthand using letters of the alphabet rather than shorthand symbols. It may be elected by students planning to complete the technical certificate or continuing education students wishing to learn rapid writing skills in a short time.

1212 Typewriting I 4

Designed for beginners, course covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

1213 Switchboard Operation 1

Introduces the student to the proper use of a telephone switchboard and the operation of the PBX800. Also included is instruction in message systems, visitor hospitality, and the proper functioning of the receptionist.

1214 Personal Development 3

Enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities necessary for success in their chosen field.

1215 Filing 3

Designed to acquaint the student with the methods and procedures for properly maintaining and retrieving business records of various types. Focus will be on indexing, coding, sorting, cross-referencing, filing techniques and follow-up procedures.

1220 Shorthand II 4

Emphasizes the taking of dictation, reading of notes, and developing of transcription skills, stressing

development of speed and accuracy through drills and tests; stresses essentials of good English principles.

1222 Typewriting II

4

Continues Typewriting I (1212) with higher developments of vocational competency, including typing of business letters, forms, manuscripts and tabulations; stresses speed and accuracy with emphasis on production typing problems and speed building.

1224 Records Management

2-3

Acquaints students with methods and procedures of maintaining business records of various types; develops skills in implementing those methods and procedures in practice situations.

1230 Shorthand III

4

Includes a continued review of fundamentals with emphasis on skill in taking new matter dictation and mailable transcription; stresses essentials of good English principles.

1231 Transcription I - Practicum

1

This introductory course will enable the student to practice editorial skills (grammar, spelling, punctuation, etc.), shorthand theory and typing production factors. Students are expected to blend these elements together to enable them to transcribe from their own notes as rapidly as copying from a typed letter.

1232 Typewriting III

4

Improves production typewriting ability in business situations, with problem and production techniques including complex tabulation, statistical reports, rough drafts, manuscripts and forms.

1233 Key Device Training

4

Prerequisite: 1212

Develops high level of skill in operating keypunch, or key to tape, or key to disc equipment; stresses speed and accuracy.

1234 Typewriting III - Practicum

1

This course is supplemental to Typewriting III (1232).

1236 Office Calculating Machines I

3

Gives the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of those used in business offices.

1237 Office Calculating Machines II

4

An advanced continuation of Office Calculating Machines I (1236), including newly developed types of machines.

1238 Advanced Key Device Training I

4

Prerequisite: 1233 or equivalent in on-the-job experience.

A continuation of Key Device Training (1233) with a higher development of vocational competency. The

course includes key verifying, programming for a number of different types of card, disk and/or tape data recorders. Speed and accuracy are stressed with emphasis on production keying problems.

1239 Advanced Key Device Training II

4

This course is designed to help the advanced student gain further proficiency with production projects on key device equipment. The student will gain experience on a wider variety of key device equipment.

1240 Shorthand IV

4

Continues Shorthand III (1230).

1241 Clerical Office Procedures

3

Prerequisite: 1222

Acquaints the student with opportunities available to clerical workers, including general qualifications required. Student learns such skills as filing, machine transcription, duplicating machine techniques and receptionist training, with introduction to duties of the Legal, Medical and Administrative Secretary also provided.

1242 Typewriting IV

4

Continues Typewriting III (1232).

1243 Office Management and Procedures

3

Studies human relations, personnel department functions and employment procedures, with emphasis on management skills and techniques of business offices; provides experience in applying skills and knowledge gained in office management situations.

1244 Transcription II - Practicum

1

Continuation of Transcription I - Practicum (1231).

1250 Shorthand V

4

Continues Shorthand III and IV with emphasis on technically specialized materials.

1253 Word Processing, Principles and Basic Systems

3

The student will be introduced to the history and concepts of word processing systems. Through the use of various types of hardware and software, the student will gain a basic understanding of the operation of a complete word processing system.

1254 Word Processing Seminar

1

The concept of word processing is introduced. Word processing theory, terminology and procedures are discussed. Manufacturers demonstrate new developments in word processing equipment. Personnel from local word processing centers communicate their employment needs.

1255 Introduction to Word Processing

3-4

This course is designed to give the student a background of the history of the word processing

function in business and its evolution and development in the modern business office.

1256 Word Processing Operations 4

This course is designed to give the student "hands on" training experience on Word Processing equipment.

1257 Word Processing Applications 4

This course is designed to give the student with Word Processing Operations experience practice in developing and applying processing projects through a problem solving approach.

1258 Magnetic Keyboard Typewriting 4

This course is designed to acquaint the student with correct recording procedures, revising and repetitive letter techniques on the IBM Memory Typewriter.

1259 Bank Teller's Procedures 3

A course designed to depict all aspects of being a bank teller. Handling cash, methods of counting, and arranging and safeguarding the cash drawer are among the procedures discussed. Checks and credit cards are covered. Techniques to acquire proper customer identification are discussed.

1260 Shorthand VI 4

Includes emphasis on speed building, new matter dictation and some transcription work on the production of mailable copy; material is designed to acquaint student with technical terminology, phrases and abbreviations peculiar to certain organizations.

1261 Administrative Office Practice 3

Emphasizes in a finishing course the skills, techniques, and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job; provides laboratory experience in applying skills and knowledge gained in previous business courses.

1262 Typewriting V 4

Stresses improvement of production techniques including correspondence, business forms, manuscripts, tabulation and secretarial projects; also, transcription of machine-recorded dictation, correct use of grammar, spelling and letter format; develops a high degree of productivity and skill.

1264 Intensive Secretarial Laboratory I 6

Entry-level secretarial program incorporates recorded simulations designed to provide realistic, meaningful learning experiences for college students; "employed" as secretaries, students perform the same duties that are required by prospective employers.

1265 Word Processing Typewriting 2

This course is designed to train typists for entry level positions in word processing centers. For-

mating skill and efficient machine operation are emphasized. Application problems stressing the revision capabilities and list processing features are stressed. Word processing concepts and theory are examined along with new trends in equipment and procedures.

1267 Machine Dictation and Transcription 2

Helps the student develop skills in transcription and communication to function more efficiently and effectively within an office situation; integrates skills learned in other areas of business education, such as Typing, Technical Communications and Business Communications and broadens the students' marketable skills, enabling them to have upward mobility in the business world and more readily attain their vocational goals.

Introduces student to operation of machine-transcribing equipment, stressing the typing of perfect mailable copy of business letters.

1269 Intensive Secretarial Lab II 6

Provides practice in handling wide range of duties and responsibilities involved in executive-level secretarial work; prepares students to set priorities, make decisions, organize work, supervise co-workers and assume new responsibilities with advancement; also provides latest information on new developments in equipment, services and practices.

1270 Introductory Typewriting (Non-majors) 3

This course is designed for beginners in typewriting who are not working toward a certificate in Secretarial-Administrative. It covers the development of fundamental touch typewriting techniques and skills, and their application.

1271 Introductory Clerical Office Procedures (Non-majors) 5

This course will acquaint the student with opportunities available to clerical workers, including the general qualifications required.

SECRETARIAL-LEGAL

1310 Legal Terminology 2

Presents the ethics of law, professional conduct, and words from Latin prefixes, suffixes, word roots and combining forms, teaching the student meanings of legal words through Latin parts, correct spelling of these terms, and intelligent use of the legal dictionary.

1313 Legal Office Bookkeeping 4

Introduces basic principles of bookkeeping as used primarily in a legal office setting, including the principles of debit and credit, double entry bookkeeping, use of journals (particularly combine journal) and analyzing transactions, as well as the use of ledgers,

posting procedures, cash and accrual bases of accounting, handling petty cash, banking procedures, payroll, work sheets, balance sheets and income statements.

1321 Legal Office Procedures 4

Provides basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the legal profession, including legal correspondence and records, client files, filing, financial administration, correct contact procedures with clients, courts, and professional agencies, plus considerations for desirable personality traits, interpersonal relationships and attitudes within the law office.

1331 Legal Office Communications 3

Studies communications skills development directed toward the legal office, with emphasis on oral and written communications directed specifically toward the legal profession.

1341 Legal Office Practice 4

Emphasizes in a finishing course the skills, techniques and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job; also provides laboratory experience in applying skills and knowledge gained in previous business courses toward handling legal forms and procedures common to a legal office; includes research assignments, maintaining legal calendars and files.

1342 Typewriting IV Legal 4

Improves production typewriting ability in legal situations; emphasizes preparing legal documents.

1345 Shorthand IV Legal 4

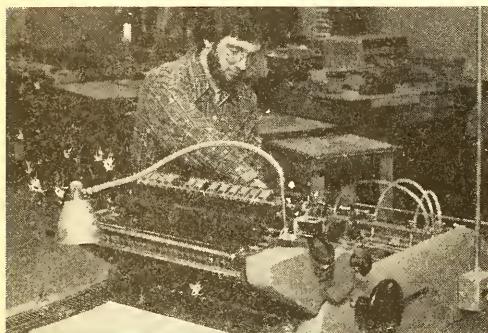
Develops student competence in specialized legal dictation and transcription of legal correspondence, forms and documents with emphasis on constructing shorthand outlines of legal terms.

SECRETARIAL-MEDICAL

1431 Medical Filing and Indexing 3

Acquaints the student with methods and procedures of maintaining business records of various types, and develops skill in implementing those methods and procedures in practice situations.





Graphics and Media

COURSE DESCRIPTIONS

COMMERCIAL AND INDUSTRIAL PHOTOGRAPHY

1610 Introduction to Photography I (Non-majors) 2

Consists of basic small format picture-taking and darkroom techniques designed for the student with little or no prior photographic background for skills development and credit. (Course is not applicable toward degree in Commercial Industrial Photography.)

1611 Introduction to Photography II (Non-majors) 2

Continues Introduction to Photography I (1610), with emphasis on equipment, materials, lighting and visualizing with a camera.

1614 Fundamentals of Photography I 2

Consists of basic picture-taking, film developing and printing, with all work done in black and white.

1615 Photographic Science and Theory I 3

Studies camera types, exposure meters, basic chemistry of the darkroom and films and photographic papers.

1616 Studio Practice I 2

Studies use of one light and reflectors, and familiarizes students with basic studio equipment and set-up procedures.

1624 Fundamentals of Photography II 2

Continues Fundamentals of Photography I (1614), with emphasis on composition and refinement of techniques used in camera work and black and white darkroom processes.

1625 Photographic Science and Theory II 3

Studies light and lenses as well as black and white developers.

1626 Studio Practice II 2

Consists of use of multiple light set-ups and achieving proper ratios and exposures, plus use of diffusers, barndoors, scrims and snoots.

1627 Darkroom Techniques I 2

Introduces black and white film and print processing.

1628 Darkroom Techniques II 3

Studies trouble-shooting in the darkroom and contrast control in film and print processing; applies

techniques needed for consistency in black and white printing and processing, and compares and tests a number of developers.	
1632 Architectural Photography I	2
Consists of photographic architectural structures, including interiors and exteriors.	
1633 Sensitometry I	2
Consists of estimation of response of photographic materials to radiant energy, including methods of exposing, processing, measurement and data evaluation.	
1634 Sequential Photography	3
Presents use of the photograph as an illustrative tool for story telling.	
1635 Product Photography	3
Introduces photographing table-top and larger products including set-up and lighting techniques for commercial purposes.	
1636 Studio Practice III	2
Practices use of view cameras and filters.	
1638 Darkroom Techniques III	2
Studies use of live film, including processing of color transparencies, color negatives and color prints.	
1640 Architectural Photography II	3
This course will deal with the more complicated situations involved with architectural photography. The course will deal with small and large room interiors and artificial light.	
1641 Sensitometry II	3
This course will deal with all aspects of color transmission and reflective sensitometry using color prints, color prints, color negatives and color transparencies. Color test strips will be processed, analyzed and graphed.	
1642 Industrial and Commercial Techniques I	2
Studies use of view cameras in controlling perspective and distortion, as well as problems of lighting and shooting on location.	
1644 Studio Practice IV	2
Explores lighting of unusual situations and materials such as glass, chrome, plastic and wood, and large objects.	
1645 Photographic Composition	3
Studies principles of photographic composition.	
1650 Advanced Photographic Composition	2
Continues study of Photographic Composition (1645) with emphasis on individual style.	
1652 Industrial and Commercial Techniques II	3
Deals with producing photographs for reproduction with special emphasis on shooting exploded views and parts catalog shots.	
	1654 Product Illustration
	2
Studies illustrative aspects of photography as applied to products and commercial applications.	
	1655 Basic Portrait Lighting
	2
Studies studio portrait lighting techniques and equipment.	
	1660 Black and White Portraiture
	2
Deals with modern specialized techniques used in camera work and printing black and white portraits.	
	1661 Photographic Science and Theory III
	3
Studies color photography including transparencies, negatives, prints, and the processes used to produce them.	
	1662 Industrial and Commercial Techniques III
	3
Explores techniques of painted light, rear screen projection and product illustration.	
	1663 Color Portraiture
	2
Presents modern specialized techniques used in camera work and printing color portraits.	
	1664 Negative Retouching
	2
Presents techniques of retouching black and white portrait negatives.	
	1665 Custom Color Printing
	2
Presents comprehensive theoretical and practical aspects of color for the photographer.	
	1668 Specialized Commercial Techniques
	3
Consists of techniques of a specialized nature used in lighting, camera work and processing commercial photography.	
	1670 Fundamentals of Optics
	2
Studies behavior and control of light in lenses.	
	1671 Advanced Portraiture
	2
Presents advanced portraiture including groups and special effects.	
	1672 Industrial and Commercial Techniques IV
	3
Studies techniques of photographic situation illustrations, architectural structures and night exposures.	
	1673 Advanced Product Photography
	2
Presents large format color product photography.	
	1674 Journalistic and Editorial Photography
	2
Consists of production of photographs with a story-telling approach, including writing of captions.	
	1675 Specialized Industrial Techniques
	2
Covers specialized photographic techniques used in	

industry, such as infrared, time-motion study photographs, and stress studies.

1676 Advanced Darkroom Techniques 2

Presents rapid access processing, production of contrast masks and internegatives and the use of color analyzers.

1677 Custom Quantity Printing 2

Presents methods used to produce custom prints in large quantities.

1678 Color Negative Retouching and Print Finishing 2

Consists of retouching color negatives and prints using modern materials and methods.

1679 Market Survey 2

Students conduct a survey of the photographic industry in a given area and prepare a statistical report.

1680 Natural Light Portraiture 2

Consists of photographing people by natural light including posing techniques, camera work, and special equipment and techniques.

1681 Portfolio Preparation 5

Students will produce the needed photographs for their portfolio as determined by a faculty review.

COMMERCIAL ART

1801 Basic Color Mixing and Figure Organization 3

Develops skills through lectures, projects and lab experiments in color mixing and compositional organization. (Intended for persons with little or no art background; course is not applicable toward an Associate Degree in Commercial Art.)

1802 Introduction to Aqua Media (Non-Majors) 3

Uses lecture, demonstrations and projects in gouache, polymer and watercolor as a visual medium. (For persons with little or no prior experience; course is not applicable toward an Associate Degree in Commercial Art.)

1803 Developmental Drawing Techniques I (Non-Majors) 3

Presents experimental projects, lectures and lab instruction in visualizing through the medium of the drawn imageU (Not applicable toward an Associate Degree in Commercial Art.)

1804 Introduction to Video Taping Processes 2

Covers theory, use and manipulation of video tape equipment. (For persons with little or no prior experience; course is not applicable toward an Associate Degree in A/V Communications Technology.)

1805 Introduction to Audio Taping 2

Covers intensively the practice and theory of audio taping. (For persons with little or no prior experience; course is not applicable toward an Associate Degree in A/V Communications Technology.)

1806 Audio Visual Slide Production 2

Teaches complete process of simple multimedia presentation, from setting objective to evaluation. (For persons with little or no prior experience; course is not applicable toward an Associate Degree in A/V Communications Technology.)

1810 Composition and Design Fundamentals 2

Aids student in forming understanding of approaches to tonal relationships, color complements and contrasts; explores two-dimensional design shapes and basic elements through application.

1811 Introduction to Illustration Media 2

Introduces watercolor, gouache and acrylic.

1812 Basic Drawing Fundamentals 2

Develops understanding of basic drawing concepts such as media use, perspective and accuracy through the use of line and mass of volume.

1813 Visual Arts Careers Orientation 2

Investigates art pursuits including research of jobs, opportunities and terminology; with activities including interview, field observation and collecting of career information.

1814 Basic Drawing Techniques I 2

Develops drawing skills through use of basic media and its application.

1815 Composition and Design Techniques I 2

Presents two-dimensional concepts and shapes, plus chroma and value through application.

1816 Illustration Techniques I 2

Affords opportunity for student to demonstrate dexterity in application of transparent and opaque aquamedia.

1820 Composition and Design Techniques II 2

Student deals with three-dimensional concepts of visual imagery, color optics and dynamics, with the illusion of 3D and the actuality of form and the use, limitations and physical manufacture of 3D concepts for commercial use.

1821 Illustration Media II	2	1834 Black and White Media Techniques	2
Concentrates on aqua-media with emphasis on various media applications.			
1822 Basic Drawing Techniques II	2	1835 Sketch Book Drawing	2
Provides further experiences in pencil and ink, and introduces felt pen techniques with emphasis on quality and accuracy.			
1823 Illustration Techniques II	2	1836 Visual Arts Processes	2
Applies practical techniques to projects such as background, spot and product illustration with aqua-media.			
1824 Typography Techniques	2	1840 Layout Design Fundamentals I	2
Presents different methods of spacing, line count, comping, and letter forms for layout and finished art applications.			
1825 Creative Typography	3	1841 Airbrush Photo Retouching	2
Presents lectures, demonstrations and projects directed toward using type as a design element in visual art.			
1826 Airbrush Rendering	2	1842 Layout Design Techniques I	2
Introduces concepts and projects in using the airbrush to render visuals in both black and white and color.			
1827 Mixed Media Figure Drawing	2	1843 Life Drawing Anatomy	2
Presents concepts and practices in using two or more media in combination for visual effect and impact.			
1828 Multi Media Figure Drawing	2	1845 Life Drawing Techniques I	2
Presents concepts, problems and discussions of various media which can be used to illustrate figures, plus advantages and disadvantages of each medium.			
1830 Typographic Theory	3	1847 Keylining Fundamentals I	2
Introduces typography and its many uses.			
1831 Black and White Illustration	2	1850 Layout Design Fundamentals II	2
Presents concentrated study in black and white illustration for reproduction.			
1832 Introduction to Photography	3	1851 Illustration Concentration I	3
Covers theory and practical application of basic camera types and teaches photography relationships to commercial art and illustrative techniques in basic preparatory course in photography fundamentals.			
1833 Commercial Visual Arts History	2	1853 Figure Rendering	2
Covers commercial visual arts development from the 1800's to current times; covers all aspects of visual art and relates them to photography, art, interior design, communications, industrial design and television, with emphasis on function, development and impact of various fields in our current socio-economic markets.			
1834 Black and White Media Techniques	2	1854 Layout Design Techniques II	2
Emphasizes pen and ink, dry brush, gouache and other black and white media with use of mechanical instruments for black ad work.			
1835 Sketch Book Drawing	2	1855 Creative Illustration Concepts	2
Introduces anatomy through spontaneous drawing and visual perception.			
1836 Visual Arts Processes	2	Studies visual techniques such as vignetting, resist impasto, flat pattern, and scale, emphasis on position of elements on the illustrative field.	
Explores how the artist can shape man's environment and the problems of visual communications.			
1840 Layout Design Fundamentals I	2		
Deals with basic concepts of layout and how they relate to finished art and the use of various media and materials.			
1841 Airbrush Photo Retouching	2		
Studio projects in photo retouching from light to cut-away retouching techniques.			
1842 Layout Design Techniques I	2		
Relates to drawing and composition and their application as layout techniques used in brochures, ads, and direct mail projects.			
1843 Life Drawing Anatomy	2		
Student studies and draws accurate anatomical renderings of the skeletal-muscular formations of the torso, limbs and cranial areas of the human body.			
1845 Life Drawing Techniques I	2		
Consists of intensive studio work with emphasis on the human figure's importance in illustration.			
1847 Keylining Fundamentals I	2		
Introduces preparation of art for printing.			
1850 Layout Design Fundamentals II	2		
Deals with concepts in layout design, techniques of visualization and how they relate to format, reproduction and finished art.			
1851 Illustration Concentration I	3		
Consists of student and instructor-designed projects directed toward enhancing knowledge and skills of illustration in a specific area.			
1853 Figure Rendering	2		
Consists of studio projects in the rendering of the human figure as used in illustrations.			
1854 Layout Design Techniques II	2		
Presents application of layout concepts in rough, semi-comprehensive and comprehensive techniques in single to process color visuals.			
1855 Creative Illustration Concepts	2		
Studies visual techniques such as vignetting, resist impasto, flat pattern, and scale, emphasis on position of elements on the illustrative field.			

1856 Creative Illustration Methods	2	1875 Fashion Illustration	2
Consists of studio projects in high design and creative techniques.			
1857 Figure Drawing for Layout	2	1881 Technical Illustration	2
Consists of studio projects in executing draped and undraped figures to achieve natural life-like situation visuals for layout.			
1858 Storyboard Techniques	2	1883 Specialized Layout Concepts	
Studies storyboards as visual tools for 35 mm and TV formats; also studies field size and position, and quality of visual techniques.			2
1859 Illustration Concentration II	3	Studies layout techniques unique to such publications as catalogs, house organs, annual reports, etc., with special emphasis on continuity and suitability of format.	
Consists of student and professionally designed projects with the emphasis on quality, completion time and suitability to project requirements; students execute projects under the direction of a field professional whenever possible.			
1860 Keylining Techniques I	2	1884 Specialized Layout Techniques	2
Develops basic techniques in keylining with emphasis on line and halftone art requirements for reproduction.			
1861 Storyboard Concepts	2	Consists of studio projects in applying the theories of designing specialized publications; stresses concept continuity, efficiency of space utilization and practicality of production.	
Consists of studio projects in multi-field sizes, sequencing and value, and chromatic alignment.			
1868 Special Darkroom Techniques	3	1885 Portfolio Preparation I	3-5
Studies photographic processes, chemicals, and paper.			
1869 Darkroom Processes	2	Consists of evaluation, finishing and scheduling processes in organizing a portfolio for job interviews.	
Studies photographic processes, chemicals, and paper.			
1870 Keylining Fundamentals II	2	1886 Portfolio Preparation II	3-5
Studies keylining in relation to mechanical specifications, camera-ready preparation and multiple-page signatures.			
1871 Audio Visual Art Design	2	Consists of execution, finishing and discussion of artwork to cover prior weaknesses in portfolio subject matter.	
Presents lectures, discussion and projects concerning the preparation of charts, graphs, flip charts, transparencies and slides used in the audio-visual communication processes.			
1872 Keylining Techniques II	2	1898 Seminar on Advertising Media I	3
Consists of studio projects in two and four-page signatures with all live visuals in position.			
1873 TV Art Design	2	Designed to offer to the Commercial Art students an opportunity to receive credit hour awards for their participation in the planning and production of the annual meeting of SAM.	
Consists of study and execution of art produced for direct or slide use on TV with special emphasis on chron and value alignment, and field size and field organization.			
1874 Medical Illustration	2	1899 Seminar on Advertising Media II	3
Presents concepts, practices and projects directed toward illustrative techniques unique to the medical profession; projects are coordinated with local medical organizations to assure applicability of concept and illustrative techniques.			
AUDIO-VISUAL COMMUNICATIONS			
1922 Audio-Visual Equipment Utilization and Maintenance	2	1923 Mathematics for AV Technicians	3
Project exercises in set-up, tear-down, storage and light maintenance of AV systems such as 16 mm movies projection systems, VTR recording and playback systems, O.H.P. systems, and audio recording and playback.			
Practical mathematics in measurements, weights, ratios and percentage.			
1930 Radio and Television	2	Includes study of operating parameters, assigned frequencies, dissemination methods, media formats, equipment, studio rates and operation of broadcast radio and television stations.	

1931	Audio-Visual Distribution Systems Design	2	1973	AV Systems For Government and Education	2
	Study and project exercises in AV systems selection and design for specific users.			Design and systems set-up for government and educational use with emphasis on in-house training, PR utilization and personnel evaluative systems.	
1932	Script Writing I—Slide Presentation	3	1982	Video Systems Maintenance	4
	Project exercises in the organization of subject content, semantics of message vocabulary needed for producing narrative scripts for audio tapes.			Study of procedures and practical experiences in light maintenance and repair of VTR decks, camera and sound systems.	
1942	Introduction to Video Tape Production	3	1983	Special Effects in Color	4
	Project exercise in the production of $\frac{1}{2}$ " black and white VTR tapes. Students will be required to produce finished VTR tapes which have "live" voice, voice over, titles and signatures. Students will also be required to conduct VTR taping of evaluative feedback exercises.			Individual projects with an emphasis on special effects in the specific media of photography and TV. Students are encouraged to coordinate their project efforts around the needs of a recognized non-profit organization.	
1951	AV Systems for Industry	3	1984	Advanced VTR Production	4
	Design and systems set-up for industrial use with emphasis on in-house training, PR utilization and personnel evaluative systems.			Projects in producing a finished video tape which has live broadcast capabilities and quality. Content will be concerned with scripting, titling, editing, sound and video mixing and both studio and externalized taping. Students are encouraged to select a subject that can be used by some non-profit service agency.	
1952	Script Writing for TV	3	1985	Multi-Tract Sound Systems and Special Effects	3
	Project exercises in writing production and content scripts for video taping. Students will produce scripts oriented to specific markets such as public information, industrial training and educational instruction.			Projects in sound system design with special attention given to special effects such as echo, reverb and dolby.	
1953	Color Video Tape Production	3	1986	Advanced Maintenance Procedures	4
	Techniques in color video tape production with special emphasis on color balance, multiple camera and microphone systems, voice and music mixing, deck-to-deck editing and titling. Projects will include production in both studio and location taping.			Study and exercises in the maintenance and repair of all types of AV equipment.	
1960	AV Production Cost Estimating	2			
	Study and exercise in the analysis of costs for the production of AV software.				
1961	Video Tape Editing	2			
	Projects in video editing involving multiple image and audio manipulation.				
1962	Message Design	4			
	A study of psychology principles and methods as applied to message design. Emphasis is given to student projects in designing signs, signals and symbols which can be used as exercises which demonstrate uniform group comprehension. Both visual and audio media will be explored.				
1963	Sound Recording and Editing	3			
	Practical exercises in sound system design including microphone types, transducers, editing and mixing on single track tape.				
1972	Motivating Psychology	3			
	A study of psychological principles designed to enable students to design projects which elicit predictable audience reaction and behavior.				

INTERIOR DESIGN TECHNOLOGY

2010	Composition and Design I	3
	Studies the basic elements of two-dimensional design and use of these elements in creative work as related to field of interior design; also studies principles of drawing flat elevations.	
2011	Color Theory	3
	Includes intensive exploration of color theory, expression, range, key and psychology, as related to individual and family with respect to living with color; also covers practical application of problems in the use of color.	
2012	History of Art I	3
	Presents art from prehistoric times through the Rococo period, presenting a view of the art of different eras in light of cultural backgrounds and interrelation of major periods of art history; studies the major changes reflected in the art of the times, also art as it relates to the designer and society in which it developed.	

2013 Fundamentals of Structural Design I

4 complete spectrum of planning, siting, landscaping, exterior and interior design, service and equipment design, legislation, and regulations.

Studies fundamentals of drafting and use of drafting equipment and building materials used in the architectural structure.

2018 History of Art II

3 Studies factors which influence the consuming public; also teaches students to examine merchandise and merchandise information to determine the best buy for a given amount of money, with a full budget completed for specified case study.

2020 Composition and Design II

3 2041 Furniture Selection

Covers 3-dimensional concepts as related to perspective drawings and teaches students how to execute renderings of actual rooms for realistic presentation to clients.

2021 Textiles I

3 Enables students to recognize quality furniture pieces through study of construction techniques; identifies furniture types and details, furniture woods as to color and graining, and common size standards for various pieces.

Studies textile fibers, weaves, finishes, yarns and dyeing processes, showing how each of these units relate to the quality of textiles found on the market and used by the professional designer.

2022 Fundamentals of Interior Design I

4 2042 Advanced Textiles

Introductory level study of window treatments, floor coverings, wall treatments, lighting, accessories, architectural and furniture styles, and the elements and principles of design.

2023 Fundamentals of Structural Design II

3 2043 Fundamentals of Interior Design II

Students design and draw blueprint plans for a residential structure of their choosing.

2031 Textiles II

3 2044 Environmental Psychology

Emphasizes textiles as they relate to the field of interior design, covering physical properties and characteristics of carpets, wall coverings, upholstery and draperies.

2032 Furniture Styles I

3 2045 Architectural Coordination

Concentrates on furniture styles and interior design as it developed from ancient times through the Rococo period.

2033 Furniture Styles II

3 2050 Applied Interior Design I

Concentrates on furniture styles and interior design as it developed from the Rococo to today. Continuation of Furniture Styles I (2032).

2034 Introduction to Non-Residential Design

3 2051 Display I

Presents space planning and the design effort in the logical sequence of a design project. Students solve the space planning problem first by understanding the operational aim, aesthetic goals and financial limitations of the project.

2035 Hotel and Restaurant Design

3 2052 Professional Practices

Focuses on the basic principles of design for hotels, motels and restaurants. The course includes a study of design schemes from extending and improving old buildings to planning new developments and the

complete spectrum of planning, siting, landscaping, exterior and interior design, service and equipment design, legislation, and regulations.

2040 Consumer Education for Interiors

3

Studies factors which influence the consuming public; also teaches students to examine merchandise and merchandise information to determine the best buy for a given amount of money, with a full budget completed for specified case study.

2041 Furniture Selection

3

Enables students to recognize quality furniture pieces through study of construction techniques; identifies furniture types and details, furniture woods as to color and graining, and common size standards for various pieces.

2042 Advanced Textiles

4

Offers practical problems on proper method of estimating and installing carpet, drapery and wall coverings with students researching and executing textile projects for class presentation.

2043 Fundamentals of Interior Design II

3

Continuation of Fundamentals of Interior Design I (2022).

2044 Environmental Psychology

4

This class emphasizes the relationship which exists, both consciously and subconsciously between the person and his immediate as well as extended surroundings. All aspects of comfort which affects the five senses are explored: touch, taste, smell, sound and especially sight.

2045 Architectural Coordination

2

A course to familiarize the students with the elements of architecture as they were appropriately designed and combined during their original period of popularity. Emphasis is placed on the decorative coordination of the whole structure with appropriate selection of details.

2050 Applied Interior Design I

4

Consists of students researching and developing solutions for case studies with residential application with complete cost and time accounts kept; purchase orders issued and follow-up.

2051 Display I

3

Studies basic principles governing displays and special techniques, and equipment required in carrying out display work.

2052 Professional Practices

3

Deals with the business aspects of an interior designer's profession. Business and legal paperwork and forms, formation of the organization, client job files and ordering procedures are topics of discussion.

2053 Furniture Arrangement and Space Planning

Prerequisites: 2013, 2022, 2041

Presents practical applications in analyzing existing conditions of interior or areas, with students working with basic floor plans and assigned furnishings to be arranged with advancement to floor plans of various types.

2055 Environmental Design

2

Studies environmental factors as they relate to human performance, behavior and comfort; students will design interiors with such things as sound, light and artificial light level, traffic flow, heating, coding and visual aesthetics of major concern.

2057 Custom Textiles and Furniture

3

Studies processes, cost and techniques involved in custom furnishings such as silk-screened fabrics, woven rugs, limited production upholstery fabrics and custom-made cabinets and furniture, with experimental projects in silk screening fabrics and simplistic furniture design executed by the students.

2060 Applied Interior Design II

4

Prerequisite: 2050

Emphasizes researching and developing solutions for case studies with commercial application of the principles and techniques learned for creative display work with students working in the field.

2061 Display II

3

A continuation of Display I (2051).

2062 Salesmanship

3

Surveys sales and techniques of selling a service, with equal stress placed on selling the product as well as the service; covers all phases of sales, including approach, demonstration, close and departure.

2063 Space Planning—Commercial

2

Consists of students completing projects intended for commercial use, with major considerations personnel task performance, traffic, environmental control, wear and maintenance factors and budget cost control; also studies fixtures, retail management, store services, marketing merchandising, pricing, etc.

2064 Merchandise Buying Techniques

2

Covers management organization procedures, quantity buying as opposed to individual buying, source discounts as stocking and non-stocking dealerships, and purchasing for individual client use and walk-in trade.

2070 Space Planning—Production

2

Studies production space planning techniques for all types of manufactured housing, including floor plans, mass production, capabilities of design,

visual alterations of home without major structural changes, materials selection versus quantity purchasing and volume, and amortization of special design features; also code requirements, anticipated life span of the structure and wear use factors for specialized structures.

2071 Lighting Techniques

3

Studies the techniques and special effects of lighting relevant to all aspects of interior design.

2072 Installation Procedures

2

Prerequisites: 2022, 2042

Studies installation methods of interior materials to develop understanding of materials' specifications.

2073 Kitchen and Bath Planning

2

Prerequisite: 2013

Studies fundamentals of space requirements for kitchen and bath; also cabinetry standardization.

2074 Office Landscaping

3

Studies space planning based on flexible systems to accommodate changing commercial needs.

PRINTING TECHNOLOGY

2210 Type Composition for Reproduction

2

Introduces photo typesetting, stressing operations and capabilities of the equipment so students can produce own material.

2211 Art and Copy Preparation

2

Provides students with basic principles of layout and design techniques; covers usage of the various tools, materials and equipment for completing the different types of layout.

2212 Layout and Stripping Flats

2

Provides instruction in basic operations required to layout and strip flats for black and white reproduction work, with various tools, materials, and equipment used in this operation covered and practiced by students.

2213 General Printing Processes

2

Stresses operations involved before actual press work, including preparation of inks, fountain solution and other supplies used by the printer; plus operations of bindery equipment used after the final product is printed.

2214 Camera Fundamentals

2

Provides instruction in the operation of process cameras, emphasizing line photography techniques and practicing fundamentals of the camera and dark-room procedures.

2215 Plate Making Fundamentals

2

Covers fundamentals of processing of plates and plate development, including tools, materials and equipment used by the plate maker as practiced by the students.

2216 Offset Presswork Fundamentals	3	2241 Printing Production Practice	2
Introduces common small press duplicators, providing correct operational procedures and actual work experience for black and white.		Emphasizes press make ready and cleaning between color runs, with students beginning to operate press as they would in a job assignment.	
2221 Camera-Line and Halftone	2	2242 Press Trouble-Shooting	2
Covers methods and techniques of photography continuous tone copy into printable halftones, understanding of densitometry, halftone computer wheels, screens, screen ranges, flash exposures, effects of highlights and show range (requires experience in line negative work).		Covers techniques of spotting malfunctions and quickly correcting them to insure continued press runs, with emphasis on correct setting of damping and inking systems, pull-out roller, stop fingers and feed rollers.	
2222 Stripping Line and Halftone Negatives	2	2243 Offset Presswork III	3
Stresses different methods of stripping line and halftone combinations; also double burns, step and repeat, work and turn, register systems and mechanical color.		Consists of experimental full production runs using the larger presses of the printing laboratory.	
2223 Photo Offset Fundamentals	2	2244 Ink and Paper for Offset	2
Introduces students to larger duplicating presses they will be using in actual hands-on work; stresses thorough understanding of offset fundamentals.		Explains the manufacture of ink and paper, and discusses problems that arise because of the different properties of inks and papers; plus identification of papers and actual ink mixing.	
2224 Printing Estimating	3	2251 Special Problems in Offset Preparation	3
Consists primarily of estimating each individual task of printing job and consolidating it to compute the entire cost of the job; also requests for estimates for jobs and of estimate sheets for the customers, including paper costs, typesetting costs, press costs and bindery costs.		Assigns to students a number of activities and responsibilities unique to the printing field ranging from responsibilities of supervision and directing groups of workers under instructors' direction to survey of research projects in areas of student deficiencies.	
2225 Offset Presswork I	3	2252 Manufacturing and Organization	3
Presents experimental presswork that will relate halftones, register work, work and turn, and mechanical color printing, stressing accuracy in operating equipment to producing the final printed material.		Studies in depth the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization, including the establishment of lines of authority, duties and responsibilities, and rules for charting an organizational structure; also reviews manufacturing, engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.	
2231 Advanced Camera	2	2253 Supervision I	3
Requires students to shoot negatives of mechanical color for 3, 4 or 5 color work. Stresses register of all work, with students expected to be able to handle any camera work given them at this time.		Covers management development of any supervisor, including responsibilities of the supervisor functioning within an organizational structure, relating to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.	
2232 Offset Presswork Operations	2	2254 Supervision II	3
Completes material gathered in Offset Presswork I (2225) with special care taken in press set and then observed for completion of this work.		Covers written and oral communications, with stress on preparation and presentation skills.	
2233 Offset Presswork II	3	2255 Printing Specialization	4
Stresses accuracy for ink coverage, neatness and register of every sheet printed, with students expected to be able to handle work of larger duration on any duplication in the lab.		Allows students to develop in areas of printing technology of interest, with the main objective to make the students more employable after graduation.	
2240 Special Effect Camera Work	2		
Stresses learning involving duotones, special effect screens, techniques in shooting and developing of film, with students encouraged to experiment under guidance of instructor to obtain different special effects.			

2262 Production Control	3	2425 Audio Visual Production	3
Aims toward developing in students ability to oversee a number of operations at one time in a typical print shop; also acquaints students with inventory controls, ordering of equipment and vendors' catalogs.		Introduces students to producing a variety of AV software and preparing catalog cards for produced and commercial media.	
2263 Introduction to Photo Typesetting	3	2426 Library Technical Services II	3
The course is divided into 2 sections. Section I teaches students basic phototypesetting concepts and terms; Section II shows students how to operate a phototypesetter and perform all the typesetting formats within the capability of the machine.		Covers simple cataloging and classifying procedures, practice in card preparation and maintenance of card catalog.	
2264 Preventive Maintenance	2	2427 Library Operations and Practices	5
Develops preventive maintenance programs for each area of printing, with various pieces of printing equipment checked periodically for wear points and maintenance schedules prepared for each area; also discusses supplies and equipment necessary to perform in-depth maintenance.		Prerequisite: Typing II Exposes students to service demands of patrons and the operations that provide the service, with students gaining hands-on experiences in a variety of tasks; including circulation services, reference services, vertical file maintenance, displays, etc. (requires actual experience in LRC or library environment).	

LIBRARY RESOURCE AIDE

2415 Audio Visual Equipment Operations & Maintenance	3	2428 Library Technology Seminar	4
Teaches students to operate a variety of AV equipment; covers basic maintenance procedures for various hardware items.		The seminar would provide an opportunity to examine special problems or topics of current interest through group discussions and guest speakers.	
2417 Library and Learning Resource Center Fundamentals I	3	2433 Library Public Services I	3
Presents a general introduction to all major phases of library and learning resource center operations, especially as they pertain to the role of "library aides"; includes library history, library systems, organizational patterns, technical and public services, and media systems.		Exposes students to basic skills and operations in areas of public assistance including circulation, informational services, inter-library loan and special programs.	
2418 Library and Learning Resource Center Fundamentals II	3	2434 Library Public Services II	3
Provides an introduction to the various types of library materials, their organization, characteristics and use in support of the library's function, with emphasis on reference service and in-depth knowledge of standard reference tools.		Introduces students to the organization, operation and services of the reference department in various types of libraries, with emphasis on becoming familiar with a wide variety of reference tools and books related to children's services.	
2419 Library Forms and Records	3	2441 Studio Lighting and Set-Up Techniques	3
Introduces standard forms and record keeping including shelf listing, serials control and filing as they apply to library functions.		Provides basics of studio lighting and familiarity with sets, equipment and production, with individual implementation of lecture materials in lab students' responsibility.	
2424 Library Technical Services I	3	2442 Introduction to Video Production	3
Introduces basic procedures in ordering, receiving and processing library materials; including mending, book repair and physical preparation of the materials for shelving.		Project exercise in the production of 1/2" black and white VTR tapes. Students will be required to produce finished VTR tapes which have "live" voice, voice over, titles and signatures. Students will also be required to conduct VTR taping of evaluative feedback exercises.	
2443 Introduction to Health Science Library	3	2443 Introduction to Health Science Library	3
		Introduces the hospital organizational structures and the standards for hospital libraries, also familiarizing students with basic reference and bibliographic tools used to give information services in the Health Sciences.	

Health Occupations

COURSE DESCRIPTIONS

CHILD CARE TECHNOLOGY

2610 Child Growth and Development 4

Introductory study of the physical, social, emotional and mental development of the young (pre-school) child. The influence of cultural environment on development and individual differences in development are considered.



2611 Group Care of Children 3

Covers role, duties and responsibilities of the child care center staff, the primary objectives, goals and responsibilities of a center; also basic value structure, setting, organization and programming of child care facilities.



2612 Childhood Health 4

A basic health and first aid course stressing specific relationships to early childhood.

2613 Orientation to Child Care Seminar 4

Acquaints students with basic principles involved in teaching the younger child, including working with parents, and the role of the kindergarten and day care center.



2624 Child Care Participation I 4

Supervised experience in child care agencies designed to enrich the student through observations and participation.

2625 Legal Aspects of Child Care 3

Studies professional organizations, child care laws, licensing requirements, and ethical and legal responsibilities of the child care team, with educational resources and in-service programs presented and related to the child care team.

2626 Science and Social Studies—Pre-School Children 4

Opportunity for aides to work individually and in groups on skills necessary for teaching science and social studies to the pre-school child. Some field trips are necessary.

2627 Child Care Seminar I 2

A companion course to Child Care Participation I (2624) with emphasis on practical application of theory learned and development of child care skills.

2631 Child Care Participation II 4

Continuation of Child Care Participation I (2624) with a change in center and head teacher.

2633 Community Resources 4

Helps students gain understanding of importance of good working relationships with adults, including

parents, community leaders and members, and employers; plus establishing connections for effective use of community resources.

2637 Child Care Seminar II 2

A companion seminar course to Child Care Participation II (2631) with emphasis on practical application of theory learned and development of child care skills.

2641 Childhood Movements and Creative Activities 4

This course enables students to recognize normal motor development and to foster activities to further normal growth in the pre-school child. Emphasis is placed on fostering creative activities to aide in this growth.

2642 Nutrition and Meal Planning 3

Students will learn the nutritional needs of the pre-school child, the state regulations for the child care centers' feeding programs. Present nutritional values in context that the pre-school child will understand.

2643 Pre-School Art 4

Covers art materials, and methods and techniques for providing art experiences for young children, with basic art skills developed from the vantage point of the child care staff member.

2645 Child Care Participation III 4

Continuation of Child Care Participation II (2631) with a change in center/or head teacher and age group of children.

2647 Child Care Seminar III 2

Continuation of Child Care Seminar II (2637).

2651 Language Arts for Children 4

Covers methods and techniques of encouraging development of language skills in pre-school age children.

2653 Business Principles 3

Includes introductory study and analysis of our business system as a whole in relation to our economic society, including introduction to business ownership, organization, principles, problems, management, control, facilities, administration and practices to develop an understanding of American Business enterprises and their functions.

2654 Child Care Participation IV 4

Continuation of Child Care Participation III (2645).

2655 Bookkeeping 4

Introduces fundamental principles, techniques and tools of bookkeeping, with an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service enterprises; includes practical applications of the principles learned.

2657 Child Care Seminar IV 2

A continuation of Child Care Seminar III (2647) with emphasis on improving the child's communication skills and the management of behavior problems.

2660 Pre-School Music 4

Deals with basic skills needed for students who plan to work with pre-school children in order to involve children in simple music activities, using simple instruments such as autoharp and rhythm instruments; presents singing, records and other materials for group activities, with participation in musical activities with the children in the laboratory as part of the program.

2661 Management Techniques 4

Presents principles of child care agency management, including theories and scope of the manager in relation to the personnel, business office, housekeeping and maintenance requirements of the agency.

2663 Audio-Visual Materials and Methods 4

Introduces audio-visual materials, methods and techniques for use in group programs, with instruction provided on preparation and use of audio-visual materials and equipment.

2665 Child Care Participation V 4

A continuation of Child Care Participation IV (2654).

2667 Child Care Seminar V 2

A continuation of Child Care Seminar IV (2657).

MENTAL HEALTH REHABILITATION

2701 Basic Techniques of Client Treatment—Physical 4

This is the first course a student must take; however, it must be taken with Basic Techniques of Client Treatment—Behavioral Management (2702). The course gives an introduction to the field and basic nursing techniques. Administration and preparation of medicine, resident programming, first aid, etc., are discussed. Identifying symptoms, assessing responsibility and keeping accurate records are emphasized.

2702 Basic Techniques of Client Treatment—Behavioral Management 4

This course must be taken with course Basic Techniques of Client Treatment - Physical (2701). Principles of behavior management, techniques of positive reinforcement, shaping, contracting, measurement, task analysis and application of resident programming are taught at a fundamental level.

2710 Techniques of Client Treatment Clinical I 4

Supervised experience for the student within a unit designed to enrich the student's awareness of the

actual profession. Observation of and participation with residents is essential. The course is designed to be taken with courses 2701 and 2702. Supervised practice of skills learned in courses 2701 and 2702.

**2711 Techniques of Client Treatment I
Physical** 4

This course deals with the physical care of the resident within a unit. Muscular patterns, body systems, first aid and seizures are discussed. A continuum in a more thorough nature of course 2701.

**2712 Techniques of Client Treatment I
Behavioral** 4

Personality, attitude, behavior and resident reactions are explored. Relationship with fellow residents, participation in outside activities and normalization are discussed. Program writing is also introduced.

**2720 Techniques of Client Treatment
Clinical II** 4

A continuation of course Techniques of Client Treatment Clinical I (2710).

2721 Physiology of the Aging Process 4

This course will develop an understanding of the physical and psychological changes that occur with aging. Adaptations of nursing techniques, treatment approaches and the environment to meet these changing needs will be explored in detail.

**2730 Techniques of Client Treatment
Clinical III** 4

A continuation of course Techniques of Client Treatment Clinical II (2720).

**2731 Program Rationale for Client
Treatment I** 2

Based on right to treatment, this course will identify the activity measures which may be applied by change agents to facilitate treatment. This course will include an overview of the approach to program, organization of program, entry behavior, sequential development, evaluation, attitude and expectations of staff and learning model.

**2732 Program Rationale for Client
Treatment II** 2

A continuation of Program Rationale for Client Treatment I (2731).

**2733 Current Issues of Mentally Retarded/
Developmentally Disabled** 2

Definitions of Mentally Retarded/Developmentally Disabled and definitions of current issues and resources for applying these issues, philosophies to resident treatment. Issues include Public Law 158, resident rights, advocacy, right to treatment, medicine model vix. teaching model, accreditation, evaluation and documentation, least restrictive alternative, normalization, accountability, and problem-oriented record.

**2734 Management of Client Living
Units**

4

Structure of the client living unit and the methods for establishing an efficient system of service delivery at the level of individual resident in specific living area. This course would include management of staff, span of control, scheduling, rhythm of life, practical application of normalization, resident interaction, assessment, etc.

2741 Developmental Model

4

This course will trace human development in terms of normal development and approach abnormal or delayed development. The work of both Piaget and Ericson will be considered. Developmental model and its indications for individual programming will be presented as it relates to resident treatment.

2742 Task Analysis

4

In teaching self help, motor and academic tasks, it is necessary to understand the sequential nature of performance and the analysis of the task to be broken down into fine elements which can be learned and sequentially performed to make up a wholly learned task. Methods of task analysis; forward, backward chaining and whole task learning will be taught and an introduction to applications of treatment.

**2743 Legal Aspects of Client
Treatment**

2

Application of the least restrictive alternative and public Law 158 to resident programming including J.C.A.H. Accreditation; explanation of a variety of treatment procedures available (from policy B-11) including extinction, over-correction and restrictive techniques, and the legal and ethical considerations of each.

2745 Normalization

4

Dr. Wolf Wolfenberger's principles of normalization and the P.A.S.S. method for evaluation of service delivery systems will be used to assess the degree to which normalization principle is being applied to resident programming. Philosophies and attitudes of normalization will be discussed in relation to the personal, human response of the trainee to a developmentally disabled population. The phenomenon of institutionalization, and the awareness and approach to deinstitutionalization for residents of mental health facilities will be presented.

**2751 Client Assessment and
Documentation**

4

Assessment techniques, rationale for assessment and methods of assessment will be considered along with tools necessary to achieve this data. Indications for phrasing referral questions will be given as well as techniques for documentation of data effected in individual client assessment. Indication of the assessment to the individual program plan and re-evaluation will be noted.

2760 Recreation and Creative Activities

3

The analysis of recreation as therapy and modes of recreation to be included in resident programming will be considered as well as adapting activity to individual needs and specific teaching objectives. Gross and fine-motor functioning and development would be included along with additional therapy necessary to provide a basis for therapeutic implementation of recreation.

2761 Interdisciplinary Team

4

Philosophy of the concept of interdisciplinary team, legal aspects, the involvement and expertise of the various disciplines will be described. The functions and mandates of the interdisciplinary team will be explored along with the practical work of the team. Ample practice with simulated interdisciplinary team will be conducted to give participants specialized experience as a functioning member of the team in designing residents' individual program plans, monthly reviews, and resident placement and follow-up.

2762 Service Delivery Systems for Developmentally Disabled

4

Funding sources, systems analysis, community agencies and inter-relationships of organizations which provide services to the developmentally disabled will be described. The philosophy of an integrated approach to service delivery will be presented as well as consideration of the zone system and specialty facilities.

2763 Advanced Individual Programming

4

This course will continue the concepts described in applied behavioral psychology. Individual programming techniques will be described giving their philosophy, rationale and methods for implementation. Supervised practice in individual programming writing incorporating positive reinforcement and aversive techniques with consideration of their legal implications will be provided. Students will be evaluated in the application of the programs to individual resident treatment as well as designing these programs.

2770 Accreditation Standards and Certification

4

Staff and programmatic accountability will be discussed with the basis of Intermediate Care Facility—Mentally Retarded Accreditation and Joint Commission for Accreditation of Hospitals standards providing the formal assessment methods for application to accountability. Individual staff accountability, group staff evaluation, professional ethics and research regarding accountability will be presented and serve as a basis for this course.

2775 Supervision for Client Treatment

4

Styles of supervision; methods of directing, utilizing

and delegating with human resources. Practical situations will be simulated. Policies regarding personnel and the rights of employees will be covered. A State of Indiana curriculum for supervision training exists and will be incorporated into this training.

MEDICAL LABORATORY TECHNICIAN

2811 Fundamentals of Laboratory Techniques

4-6

Introduces elementary and basic skills encountered in the medical laboratory; includes identification of the role of the laboratory assistant in the medical laboratory.

2813 Clinical Immunohematology Techniques

4

Studies principles and practice of laboratory techniques in blood bank.

2814 Clinical Routine Analysis Techniques

4

A study of the principles and practice of clinical laboratory techniques in the routine analysis of body fluids.

2820 Clinical Hematology Techniques

8

The course presents principles and practice of laboratory techniques in hematology.

2821 Clinical Immunohematology Applications I

3-6

This course is a study of the procedures found in a clinical laboratory blood bank including: the detection of various blood group system antigens and antibodies, donor screening, hemolytic disease of the newborn, phlebotomy and processing and recommendation of the American Association of Blood Banks.

2822 Clinical Routine Analysis Applications

3-4

Studies the clinical applications of routine analysis in the hospital laboratory.

2823 Clinical Microbiology Techniques

6

A course designed to acquaint the medical laboratory technician with the principles and practice of laboratory techniques in microbiology.

2824 Advanced Techniques in Immunohematology

1

This course is intended to introduce the student to typical problem situations that occur in the blood bank and the specialized techniques required for their resolution. The course is also designed to give the students experience in processing maternal and newborn specimens for RhO immune globulin eligibility and administration. The students will be provided with patient specimens, reagents and equipment, procedures, and case histories.

2825 Advanced Immunohematology Techniques

2

Through the use of assigned reading materials, lecture, and slide and tape presentations, this course will acquaint the student with such techniques as the investigation of transfusion reactions, component, preparation, investigation of hemolytic disease of the newborn, autoimmune hemolytic anemia, and quality control.

2826 Advanced Hematology and Urinalysis Techniques

2

A continuation of courses which concentrates on the theories and advanced procedures in hematology and urinalysis.

2827 Clinical Immunohematology Applications II

3

A continuation of Clinical Immunohematology Applications I (2821).

2828 Advanced Microbiology, Parasitology, and Mycology Tech

4

This course acquaints students with the isolation and identification of pathogenic bacteria and anaerobes; introduces students to the collection and processing of specimen and the techniques of isolating and identifying fungi, parasites, and

2830 Clinical Chemistry Techniques

8

Studies the principles and practice of laboratory techniques of clinical chemistry.

2831 Clinical Hematology Applications

5-8

A course designed to study hematological tests and the principles and laboratory techniques of hematology.

2832 Clinical Immunology Techniques

4

This course concentrates on serological tests and the principles and laboratory techniques of serology.

2833 Advanced Chemistry Techniques

4

This course will be concerned with those techniques that lie outside of routine clinical chemistry testing such as toxicology, endocrinology, and inborn errors of metabolism.

2836 Advanced Immunology Techniques

2

This course will introduce the student to the theory and techniques of nonroutine serologic tests such as the titration of viral antibodies, indirect hemagglutination, immunodiffusion, counter-immunoelectrophoresis, and microtiter technique.

2840 Clinical Chemistry Applications

6-10

This course is designed to acquaint students with the analytical aspects of clinical chemistry and laboratory testing.

2841 Clinical Microbiology Applications

4-6

A study of the applications and clinical practices of bacteriology found in the hospital laboratory.

2842 Clinical Immunology Applications

2-4

Presents a study of the practices in the clinical applications of serology in the hospital laboratory.

2863 Instrumentation

4

Presents instrumentation theory and practice as applied to electronic equipment and automated systems in the medical laboratory.

DENTAL ASSISTANT**3001 Introduction to Dental Practice**

2

Prerequisite: Permission of the program supervisor. Presents the objective, qualification, responsibilities and scope of services of the dental assistant in practice, enabling students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming and personal qualifications considered necessary to employment; also presents history and legal aspects involving various members of a dental health team; stresses nomenclature and terminology relevant to the field of dental assisting.

3003 Dental Materials and Laboratory I

4

Prerequisite: Permission of the program supervisor. Acquaints students with properties of dental materials, proper mode of manipulation, necessary armamentarium used and technical duties dental assistants can perform; stresses clinical behavior of materials and covers certain biological considerations of importance to dental assistants.

3007 Preclinical Practice I

5

Prerequisite: Permission of the program supervisor. Introduces students to the dental operatory and responsibilities of the dental assistant: housekeeping duties, assisting the doctor, patient care, equipment and instrument identification, instrumentation, tray set-ups, effective teamwork, 4-handed dentistry, operative dentistry and sterilization procedures; stresses practice sessions and terminology relevant to these subject areas.

3008 Dental Anatomy

4

Prerequisite: 3007

Acquaints students with areas of oral anatomy, head and neck anatomy, basic embryology, histology and tooth morphology as it relates to the dental field, with emphasis on Dental Assistants' need to understand material as assisting; also includes terminology relevant for effective communication; incorporates drawing and carving of teeth by students for development of dexterity in hands and fingers.

3010 Dental Materials and Laboratory II

Continues Dental Materials and Laboratory I (3003). 4

3011 Preclinical Practice II

Continues Preclinical Practice I, presenting anesthesia along with the following specialties: oral surgery, endodontics, periodontics, pedodontics, orthodontics, prosthodontics and public health, with field trips to specialty offices for student observation. Students continue to practice all procedures learned in Preclinical Practice I and II on mannequins in the dental laboratory, with terminology relevant to subject areas presented.

3012 Oral Pathology/Microbiology

Introduces basic concepts of microbiology presented with emphasis on oral microflora; presents pathogenic problems of oral cavity, emphasizing signs, symptoms and prognosis of disease processes; also consists of laboratory experiments allowing observation of organisms.

3013 Preventive Dentistry/Diet and Nutrition

Prerequisites: 3001, 3008

Acquaints students with importance of preventive dentistry, showing how diet and nutrition play a part in it; presents techniques for good oral hygiene to be used in the dental office to assist patients in maintaining good oral hygiene and dental health.

3034 Dental Radiography

Prerequisite: 3011

Gives instruction in basic principles of X-ray production, radiation sources, benefits, effects, control and hygiene; includes history, modern dental radiographic equipment and techniques, anatomical landmarks, dental films and processing done on and off mannequin's teeth; stresses avoiding errors in exposing and processing dental radiographs.

3038 Clinical Practice I

Allows students to use skills and knowledge of dental materials, clinical procedures and manual skills practiced on a mannequin as learned in 3007, 3011, 3003, and 3010; skills will be practiced in a simulated office situation using live patients.

3039 Dental Office Management

Prerequisite: 3011

Presents principles of administrative planning, bookkeeping, filing, recall programs, banking, tax records, basic written communications, insurance office practice and management as related to the dental office; stressing techniques of appointment control, records, credit and payment plans.

3043 First Aid and Pharmacology

Prerequisite: 3038

Presents lectures and demonstrations concerning emergencies in the dental office, with treatment and

prevention; also presents pharmacology as it applies to dentistry and the dental assistant's role, familiarizing students with origin, effects, use and dosage of common drugs used in dentistry. Also includes prescription writing, metric system and state and dental profession safety precautions required in the use of medicaments; provides practice in determining vital signs and performing cardiopulmonary resuscitation and emergency cardiac care in accordance with standards of the American Heart Association.

3044 Clinical Practice II

11

Provides practical chairside dental assisting experience gained from private dental practices in general and specialty areas of dentistry, with weekly seminars included as an integral part of the learning experience.

EMERGENCY CARE TECHNICIAN**3215 Orientation to Emergency Medical Services**

5

Acquaints students with basic principles of nursing and emergency medical care in practice, including familiarization of hospital environment, enabling students to become accustomed to performing basic procedures smoothly, without embarrassment or inconvenience to the patient.

3216 Clinical Experiences (AMB) I

3

Presents observation and application of basic emergency care techniques in approved emergency service vehicle.

3217 Emergency Care Techniques I

4

Presents theory, recognition and emergency care of shock victims, including anatomical structure of the respiratory system: auscultation and percussion of chest sounds, rapid clinical assessment of the chest.

3218 Crash Injury Management

3

This course has been prepared to aid "First Responders" in emergency care, enabling them to obtain a high level of skills and to be able to respond to crash related and life-threatening emergencies as qualified personnel.

3219 Basic Emergency Medical Technicians-Ambulance

5

Provides development of basic principles of emergency care in ambulance operation, including skills development, pulmonary depression and arrest, cardiac arrest, bleeding and shock, and management of acute medical and psychiatric problems. Presents principles of emergency care of wounds, burns and environmental injuries, and related orthopedic injuries and sterile techniques. Students completing this course successfully are eligible to take a certification test prepared by the Indiana Emergency Medical Services Commission.

3221 Basic Cardiology	4	3242 Clinical Experience III	9
Provides for recognition of basic cardiology system, including instruction in cardio-physiology, pathology, electrocardiography and basic principles of cardiac monitoring.		Prerequisite: 3235 Enables students to correlate principles and concepts presented in classroom to emergency care in practice through situational review; includes closely supervised observation and assistance in emergency departments, intensive care units and operating rooms of cooperating hospitals.	
3224 Advanced Cardiology	4	3243 Seminar in Emergency Room Techniques	3
Prerequisite: 3221 Includes electrocardiology with emphasis on arrhythmias and myocardial infarction, interpretation of EKG and arrhythmia, correlating patient symptoms and treatment; also includes monitors and defibrillators with understanding of operations and electronics, a therapeutic approach to coronary systems, complications, shock, drugs and treatment; highlights cardiogenic medications.		Prerequisite: 3242 Presents case studies in emergency care situations, including correlation of concurrent Clinical Experience III (3242).	
3225 Emergency Care Techniques II	5	3244 Practicum	5
Treats medical emergencies of the general population, including care of the unconscious patient, hypertension, diabetes and seizures, also emergency techniques for care of traumatic emergencies.		Provides experience in selected clinical procedures under direct supervision of a physician. (Required for EMT-2; arranged by permission of instructor.)	
3228 Medical/Surgical Techniques I	3	3246 Practicum in Emergency Care	5
Prerequisite: 3215 Develops specifically for the ECT student basic principles of sterile technique in relationship to the pre-operative and post-operative care of the patient, including an orientation to an ideal situation, adaption to basic principles, patient positioning and transportation; and understanding of basic concepts of anesthesiology; principles and skill in handling drapes, care of contaminated cases; understanding of explosion hazards and prevention of infection; processing and preparation of nondisposable items. Also covers principles of sterilization, instrument identification, suture and needle use; care of surgical specimens; importance of accurate record keeping, surgical preps and skill in hand scrubbing, gowning and gloving procedures.		Provides experience in selected clinical procedures under direct supervision of a physician (required for EMT-II; arranged by permission of instructor).	
3233 Pharmacology	3	3247 Basic EMT Refresher Course	2
Acquaints students with administration of drugs and includes instruction in scope of pharmacology, classification of drugs, dosage forms, preparation, methods of administration, interactions and incompatibilities; stresses use of drugs and medications as related to emergency care in practice.		Prerequisite: 3219 Presents basic theory and laboratory practice necessary to update emergency medical technician-ambulance skills.	
3235 Medical/Surgical Techniques II	3	3248 Basic Life Support Concepts and Skills	3
Prerequisite: 3228 Continues Medical/Surgical Techniques (3228).		Provides knowledge for security personnel, hospital employees, allied health workers, business office personnel and interested persons in industry to render immediate care at site of accident or medical problem until professional emergency medical technicians arrive and transport victim to medical facility.	
3236 Clinical Experience II	5	3249 EMT-A Refresher	3
Prerequisite: 3228 Enables students to correlate principles and concepts presented in classroom to emergency care in practice through clinical experience in cooperating hospitals; includes 50 hours in emergency room, 30 hours in cardiac care unit, 10 hours in obstetrics, including prepartum, postpartum, delivery and recovery, and 40 hours in orthopedics.		A review for maintaining a uniformly high level of skill competency among emergency medical technicians who have successfully completed basic training in Emergency Medical Care.	
CULINARY ARTS			
3410 Introduction to Catering	4	Social catering is a rapidly expanding field as individuals, families, and organizations continually seek good catering services. The caterer must see to it that the customer is pleased with both the quality of the product and the service. This course therefore helps the novice as well as the established caterer to start or improve their business.	

3412 Introduction to Volume Food Preparation	5	3441 Food and Beverage Purchasing and Service	3
Presents fundamentals of cooking applying to all food preparation and requisite to progress in the cooking field; includes personal hygiene, sanitation and safety, basic menu writing and balancing meals; also knowledge needed for progressive steps in preparing completed meals.			
3414 Introduction to Volume Food Service	3	3443 Gourmet Food Preparation	6
Presents steps taken in getting completed meal to customer in fastest and best manner while still retaining quality; includes various types of table setups and service—American, French, Russian, etc.; stresses waiter training, busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation, and proper storage of all portable equipment.			
3421 Nutrition	3	3451 Introduction to Food Service	3
This is an introductory course in nutrition which covers determination of individual requirements for energy protein, minerals and vitamins, foods as a source of daily requirements and the relationship of food and nutrition to optimal physical fitness.			
3422 Volume Food Preparation	5	3452 Food Service I	3
Introduces methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, mathematics used to determine proportion costs to determine profitable selling price; also includes preparation of volume foods, methods of retaining top quality in prepared foods until dispersion, timing of activities to have products ready just prior to service and limitation of menu items in this type of food service.			
3424 Volume Food Service	3	3453 Food and Beverage Service	3
Presents methods used to dispense volume foods, cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.			
3432 Food and Beverage Management and Service	3	3454 Foods Service Specialty-Baking	3
Covers entire food and beverage operations from purchasing, receiving and storage to preparation and service.			
3433 Food Production Principles	3	3455 Menu Design	4
Examines the responsibilities and the techniques of quality and quantity food production. The course also includes the classification of food in meat and vegetables.			
3435 Institutional Foods Service	3	3456 Food Service Specialties II - Garde Manager I	3
Covers cafeteria and dining room service, cart service, prepared tray service and portable hot cart service; includes cleanup and sanitation entailed in above methods.			
Studies in detail the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shellfish, meats and alcoholic beverages.			
Studies transition from volume food preparation to gourmet foods, with preparation of highest quality food and most challenging; students take turns leading operations in gourmet preparation of smaller of individual dish preparation; also includes marketing, menu writing, recipe research and methods; preparation and potentials for showmanship.			
The student receives a background of the history of various cuisines and contributions of leading Culinarians as well as a background of the food service industry. A study is made of the various types of food service establishments and organizational structures within each type. Future trends of the Food Service Industry will be discussed.			
A study of the fundamentals of food preparation, service procedures and sanitation, and safety practices in the food service business. Controls and management function also are discussed.			
A course dealing with types of dining service appropriate for coffee shops, dining rooms, banquets and buffets. It covers liquor laws and the fundamentals of the service of legal beverages.			
Introduces the student to the preparation and use of yeast in breadmaking and pastries. Topics will include baking of pies, cakes, tarts, use of equipment and sanitation.			
Menus are planned for varying numbers of people in order to meet the food requirements of various types of food service operations. This course includes principles and practices relating to pricing menus, ordering, conversion of recipes from small to large quantities, various types of menus and food preferences of the public. The principles of nutrition which are necessary for planning well balanced menus receive special emphasis.			
Special Garde Manager techniques, such as ice and tallow sculpturing, are studied and the manipulation of the tools which are used is stressed. Buffet showpieces such as watermelon baskets, table ar-			

rangements of fresh fruits and vegetables and similar accent decorative showpieces will be completed. Students will be introduced to the art of pulled sugar.

3457 Purchasing Procedures 3

A study of the principles and practices concerned with the purchase of food, supplies and equipment for hotels, motels and restaurant operations. Testing and evaluation techniques and storeroom controls are emphasized.

3458 Food Specialties III - Garde Manager II 3

Advanced Garde Manager techniques, such as aspic-pates, chaud-froid, terrines, gelatines and sauces are studied and the manipulation of the tools which are used is stressed. Buffet table arrangement and organization will be stressed.

DIETARY ASSISTANT

3607 Nutrition and Diet Therapy 5

Presents to food services employees or prospective employees of health care institutions knowledge about basic nutrition, therapeutic diets and menu planning; students use knowledge by writing menus.

3608 Dietary Management I 5

Includes specifications, storage, purchasing and storage, feeding in emergencies, sanitation and safety in format designed for food service employees or prospective employees of health care institutions.

3609 Dietary Management II 5

Includes specifications, storage, purchasing and preparation of food, recipe standardization, kitchen designs and delivery systems in format designed for food service employees or prospective employees of health care institutions.

3610 Nutrition 2

Introduces students to terminology used in nutrition, the nutrients, foods which are excellent sources of nutrients, the basic four and menu planning.

3611 Diet Therapy 3

Introduces principles of menu planning for therapeutic diets, medical terminology necessary to obtain information from patient care plans and State Board of Health requirements relative to therapeutic diets.

3612 Nutrition and Diet Therapy Practicum 1

Involves writing of general menus and therapeutic modification of general diets, with students attending patient care conferences and writing dietary section of patient care plans.

3613 Personnel Management 2

Involves preparation of management tools, communication techniques, labor laws, kitchen layouts

and emergency feeding.

3614 Personnel Management Practicum 1

Involves use of management tools such as time schedules, organizational charts, job analysis and job descriptions, with students conducting employee interviews and training sessions.

3615 Sanitation 2

Deals with sanitation and OSHA regulations as they apply to a dietary department.

3616 Sanitation Practicum 1

Involves evaluation by students of sanitary aspects of their dietary department and OSHA regulations and written recommendations for improvement.

3617 Cost Control 2

Discusses purchasing and cost control as applied to a dietary department; also introduces food specifications, factors which affect the food market, labeling of food, convenience foods and inventories.

3618 Cost Control Practicum 1

Involves determination by students of cost of food, non-food supplies and labor; also includes ordering of food and supplies after evaluation by reading labels.

3619 Food Preparation 2

Involves discussions of food preparation techniques followed by preparation of food using various techniques discussed; includes standardized recipes, the metric system and types of tray service.

MEDICAL ASSISTANT

3712 Medical Office Procedures Clinical I 4-6

Presents patient preparation for routine examinations in physician's office, including assisting with physical examinations, taking and recording vital signs, understanding principles of general nutrition, caring and preparing sterile equipment and ordering supplies.

3713 Medical Office Bookkeeping 4

Introduces basic principles of bookkeeping as used primarily in medical office settings, including principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journals) and analyzing transactions.

3721 Medical Office Procedures 4

Prerequisites: 1212, 3713 Co-requisite: 3712

Provides basic understanding of secretarial and bookkeeping duties and responsibilities pertinent to medical offices and health care agencies, including medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals, and professional agencies.

3722 Medical Typewriting I

Prerequisites: 1212, 9355

Improves production typewriting ability in the medical field, with emphasis on articles, medical forms, case histories and correspondence using medical terminology.

3724 Medical Linguistics I

2

This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

3730 Medical Assistant Laboratory

4

Introduces students to various laboratory and x-ray procedures, with emphasis on preparation of patients for various procedures, their purposes and expected norms of results, with students expected to be able to demonstrate proficiency in collection and/or preparation of specimens, including urine, blood, biopsies, Pap smears, and cultures and their respective preservatives for deliverance to the proper laboratories at completion of course.

3731 Medical Assistant Clinical Experience I

4-5

Prerequisites: 3712, 3741

Provides opportunity to perform various administrative procedures under supervision, with learning experiences obtained in selected physicians' offices, clinics and hospitals.

3732 Medical Office Communications

4

Studies communications skills development directed toward the medical office, with emphasis on human relations.

3733 Medical Typewriting II

2-3

Prerequisites: 3722, 9355

Continues Medical Typewriting I (3722) with emphasis on development of speed and accuracy.

3734 Medical Laboratory Techniques I

2

Introduces various laboratory and x-ray procedures with emphasis on preparation of patient for various procedures, their purposes and expected norms of results, aims for proficiency in collection and preparation of specimens, such as urine, blood, biopsies, Pap smears, and cultures and their respective preservatives for deliverance to the proper laboratories.

3735 Medical Laboratory Techniques II

3

Prerequisites: 3730, 3731

Continues 3730 and 3731; includes tests that might be done in a physician's office, such as urinalysis, gram stains, pregnancy tests, blood counts, sedimentation rates, etc.; students will also learn to communicate proper preparation for x-rays to patients, identify safety hazards and precautionary measures relevant to x-ray equipment.

3 3736 Medical Law

2

Stresses legal requirements and implications to medical professional and subprofessional practices, introduces medical law for understanding of legal relationship of the physician and patient, creation and termination of contracts, professional liability, malpractice, tort liability, breach of contract and the Medical Practice Acts.

3737 Medical Ethics

2

Studies ethics of medicine and medical practice, with emphasis on professional attitudes and behavior and fundamentals of meeting special needs of patients, presents brief introduction to history of medicine, including great men of medicine and their contributions to develop kinship and pride in the medical profession.

3738 Written Communications

2

This lecture course is designed to assist the student in understanding the fundamental concepts of writing, of taking and writing medical histories and letters clearly and effectively. Written communications also play a major role in the total communication system and are equally as important in creating a favorable impression. This course also prepares the student to be able to compose and answer letters that are clear and tactful as well as correct in grammar.

3739 Psychology of Holistic Medicine

3

Provides a theoretical framework for the student before approaching the care of patients; examines the person from an in-depth as well as holistic perspective and defines health and illness in relation to one's cultural background.

3740 Medical Linguistics II

2

Continues Medical Terminology (9355) with Greek and Latin prefixes, suffixes, word roots and combining forms, including meanings of medical words through Greek and Latin parts and correct spelling of these terms; studies urinary, endocrine, reproductive, respiratory, nervous and sensory systems, as well as medical terms in proper relationship to the anatomy of the body and related disease, anomalies and surgeries.

3741 Medical Office Procedures Clinical II

4-6

Expands 3712, with special emphasis on principles and procedures as they relate to office practice, including assisting in minor surgery, physical therapy, diathermy and electrocardiograms.

3743 Machine Transcription Medical I

3

Prerequisite: 3722

Presents fundamentals of medical dictation and machine transcription, includes typing medical reports, medical terminology and medical correspondence, with students expected to demonstrate proficiency in typing and terminology involved in medical materials.

3744 Machine Transcription Medical II	2	3769 Medical Assistant Administrative Externship	4
Prerequisites: 1212, 3722, 3733, 9355, 3740			
Presents fundamentals of medical dictation and machine transcription, includes typing medical reports, medical terminology and medical correspondence, with students expected to demonstrate proficiency in typing and terminology involved in medical materials.			
3750 Medical Office Procedures Clinical III	4-5	MEDICAL RECORDS TECHNOLOGY	
Prerequisites: 3712, 3741			
Emphasizes principles and procedures as they relate to office practice, including diagnostic procedures, math of pharmacology, care of stock medications and drug samples, care of instruments, knowledge of therapeutic diets.			
3751 Machine Transcription Medical II	3	3810 Medical Record Science I	3
A continuation of Machine Transcription Medical I (3743), with emphasis on case studies and reports.			
3753 Drugs and Solutions	2	Orientation is given in the field of medical records including: history of medicine and hospitals, history of medical records, the profession of medical records, methods of numbering and filing, record storage, retrieval and retention, hospital organization and organization of the medical staff. The basic functions of the medical record department are introduced.	
3761 Community Health	2	3820 Medical Record Science II	3
Studies health services in the community, including preventive services, institutional components of health care systems, financing health care and manpower; also, general issues of quality environment, pollution control and population control, and planning research and health problems as issues of public policy.			
3763 Medical Office Management	3	3830 Medical Record Science III	3
Supplies background for organization and management of a physician's office and an in-depth study of government types of health insurance coverage.			
3764 Payroll and Taxes	3	The student focuses on the basic principles of classification and indexing of diseases and operations. Current systems of indexing and coding will be covered including the registers and indices generated by the various coding and indexing methods.	
Develops skills in federal and state withholding tax procedures, with students learning to prepare periodic statements and withholding and income tax returns; also includes study of payroll systems as applied to the medical office.			
3765 Medical Insurance	2	3841 Introduction to Pathology	3
Provides overview of medical insurance programs, with skills developed in handling insurance forms and reports as applied to the medical office.			
3766 Advanced American Red Cross First Aid and Emergency Care	3	3842 Seminar in Medical Records	1
Teaches students to be able to recognize emergency situations, know the proper course of action with different types of emergencies and apply first aid techniques if necessary.			
3768 Comprehensive Certification Review	3	This course should be taken in the final quarter of the Medical Records Technology program. Students will go through the sequence of problem solving in the medical record area. A plan will be developed for a medical record department including layout, workflow and check points. Elements of medical record department management will be discussed and a "mock" ART exam will be given.	
Prepares for the certification test.			
3845 Medical Record Science IV	3	The student covers hospital statistics in the form of daily, monthly and annual reports and daily census. Vital statistics such as birth and death certificates are also covered. An introduction to tumor registries is given. The student will be introduced to computer programs for medical record departments along with a look at the techniques for medical audit and research. The use of statistics, compilation of data and reports and the methods of presentation of data will be covered.	
3846 Directed Clinical Practice I	6	The student will be provided a supervised learning experience where skills will be developed in various aspects of medical record processing and procedures. Actual on-the-job experience will be gained through placement in the Medical Record Department of a cooperating hospital or other health agency. May be repeated for credit.	

3847 Directed Clinical Practice II

A continuation of 3846.

3848 Directed Clinical Practice III

A continuation of 3847.

3849 Directed Clinical Practice IV

A continuation of 3848.

HUMAN SERVICES**4021 Adolescent Development**

4

Introduces study of physical, social, emotional and mental development of adolescents and considers influence of cultural environment on development and individual differences in development.

4022 Drugs and Alcohol

4

An introductory course for individuals who wish to increase their knowledge regarding problem drinking or drug abuse. Covers the basic causal theories of alcoholism, identification signs and symptoms, dispels some of the myths and provides information on treatment sources.

4023 Problems of Alcohol and Drug Addiction

4

This course will serve as an assessment and treatment approach to alcohol and related drugs. Alcoholism will be studied in its social and clinical context. Attention is given to the basic theoretical approaches to the disease; however, major emphasis is focused on approaches to treating the alcoholic or drug abuser.

4024 The Physiological Effects of Alcohol and Drugs

4

The principal thrust of this course is to focus on the effects of alcohol and other drugs on the body—to study the physiology of alcohol in two areas: (1) physical effects of alcohol on the body, and (2) the physiological effect of the disease.

4025 Group Leadership and Group Process

4

An introduction to the dynamics of group interaction and especially group leadership. The factors involved in problems of communications, effective emotional responses, and personal growth will be highlighted. The emphasis will be upon directing group process as a method of changing behavior.

4026 Family Counseling Approaches to Alcohol Problems/Drug Abuse

4

A course designed to present basic ideas about dynamics, particularly as they apply to the alcoholic family and to explore the practice strategies for the worker who counsels the family of the client.

4027 Intervention and Referral Techniques

4

Techniques used for crisis and beginning counseling, intake interviewing, and referral will be

- 2 studied and practiced. Special attention will be given to the process of intervention, admitting and recording of information as it pertains to alcohol and drug abuse clients.

4031 Introduction to Social Welfare

4

- 4 The philosophy of social service and an analysis of the client-worker relationship within the agency setting; an overview of job opportunities in social service and an analysis of the client-agency relationship.

4032 Helping Relationship Techniques

4

The client-worker relationship: how to prepare for carrying on and following up the interview or counseling session. Emphasizes practice in development of client-worker relationship skills.

4033 Helping and Behavioral Stress

4

Designed to help students learn how to apply techniques of adjustment to stress and change.

4034 Interviewing and Counseling

4

Emphasizes practice in development of client-worker relationship skills.

4042 Introduction to Activity Therapy

4

This course is designed to provide the first major introduction to the field of Activity Therapy. Visits will be made to facilities in the area that provide activity programs for special population groups. Emphasis will be mainly on community and special agency activity therapy programs.

4043 Activity Therapy with Special Populations

4

This is a practicum survey of craft media and activities; the student will plan, organize, select materials and supplies, and lead craft projects — emphasis placed on adapting activities to the special needs of various client groups.

4044 Institutional Activity Therapy

4

This course will emphasize activity therapy methods, techniques, and program development within medical hospitals and specialized live-in institutions. This course will also provide an insight into the interdisciplinary approach to rehabilitation and an introduction to each discipline that makes up that approach.

4045 Activity Therapy Program Planning

4

This course will acquaint the student with the characteristics and activity needs of the handicapped, disadvantaged, ill, and the aged. This course introduces the student to basic program planning and leadership roles. Exposure of the student to different special groups and special settings (i.e. hospital, institutional, nursing home, community center, etc.) will also be presented.

4052 Psychology of Aging and Death

4

An introduction to the developmental processes in adulthood with special emphasis on aging and death

and dying.

4053 Physiology of Aging

4

Main emphasis on physiological function of the human body as it meets the changing demands of age, and on the interrelationships of each of the body's systems.

4054 Recreational Programming for the Elderly

4

Design and implementation processes for activities programs related to the needs of elderly persons in institutions of senior citizens.

4055 Nursing Home Administration

4

Prepares students for assisting in nursing home administration: departmental bookkeeping, record keeping, budget preparation, ordering and storing supplies, medications, preparation of in-service programs, public relations, personnel policies, payroll and personnel evaluation procedures.

4061 Directed Practice III

6

Further understanding and agency applications of skills learned previously.

4062 Introduction to Community Organization and Development

4

Methods of organizing community groups for action in the fields of health, welfare, housing, consumerism and the environment. The student chooses one project in which he must plan a program to initiate action in a specific problem area.

4063 Coordination of Volunteers

4

Focuses on recruitment, training, supervision and evaluation of volunteer workers with emphasis on winning commitment and cooperation.

4064 Fund-Raising

4

(Course under development)

SURGICAL TECHNICIAN

4211 Surgical Techniques I

10

Presents basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient, including orientation to an ideal situation, adoption of basic principles patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing and preparation of nondisposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

4213 Microbiology for the Surgical Technician

3

Presents basic background in study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction, knowledge of microbiology in correlation with operating room technician in the operating room, the obstetrical unit and the emergency room.

4221 Surgical Procedures I

5

Studies basic surgical procedures in relation to the total physiological aspects of surgical interaction, including a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests and immediate post-operative care.

4222 Clinical Applications I

8

Enables operating room technician students to correlate basic principles and concepts of classroom lecture to working situation through clinical experience; includes scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures and observing and assisting with procedures in obstetrics and emergency room.

4230 Surgical Procedures II

5

Studies advanced and specialized surgical procedures in relation to the total physiological aspects of surgical interaction. Focuses on the concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedures and review of total patient including typical patient, diagnostic tests and immediate post-operative care.

4231 Clinical Applications II

10

Continues Clinical Applications I (4222).

4232 Obstetrical Techniques

3

Affords the operating room technician students a basic understanding of the effect of pregnancy anatomically, physiologically, and psychologically on the obstetric patient; allows operating room technician students to function in the obstetrical unit and in the operating room on obstetrical cases with a basic understanding of obstetrics.

4240 Clinical Applications III

10

Continues Clinical Applications II (4231).

4241 Emergency Room Techniques

2

Gives operating room technician students basic understanding of psychological and physiological effect of trauma on the emergency patient; provides basic knowledge of emergency conditions, emergency procedures and capacity to function under adverse conditions that threaten a patient's well-being.

4242 Surgical Procedures III

4

Studies specialized procedures in neurosurgery, cardiovascular surgery and chest surgery; stresses pertinent anatomy and pathology as well as diagnostic tests and immediate post-operative care.

4244 Operating Room Medical Terminology

2

Review medical terminology pertinent to the operating

room, with emphasis on root forms, prefixes and suffixes and word-building techniques.

Practical Nursing

4409 Basic Science for Practical Nursing I 4

Prerequisite: Admission to the Practical Nursing Program

Introduces the general body plan, the relationship of microorganisms and disease conditions, symptoms, diagnostic tests, nursing measures and medical terminology as related to the body as a whole, and integumentary, musculoskeletal, cardiovascular and digestive systems.

4410 Basic Science for Practical Nursing II 4

Introduces the relationship of microorganisms and disease conditions, symptoms and diagnostic tests, nursing measures and medical terminology as related to special senses and the nervous system.

4411 Nursing Techniques and Care I 3

Prerequisite: Admission to the Practical Nursing Program

Studies principles that guide nursing action, equipment and supplies which complete a patient's unit, preparation of a patient unit using good body mechanics, and protective measures for patients and components of personal hygiene.

4420 Nursing Techniques and Care II 3

Prerequisite: 4411

Introduces students to essentials of good communication, methods used in physical examination, including correct procedures in measuring temperature, pulse, respiration and blood pressure; discusses reporting and recording of pertinent information using correct medical terminology, with emphasis on reporting abnormal findings to the registered nurse (RN) or team leader.

4421 Medical Surgical Nursing I 4

Prerequisites: 4409, 4410, 4411, 4420, 4430, 4443, 4450

Co-requisite: 4423

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic tests and nursing measures for specific disease conditions; also, measures to prevent illness as well as management of disease through use of therapeutic agents; discusses management of pre- and post-operative care of surgical patients and diabetics and conditions related to the cardiovascular system.

4422 Nutrition and Diet Therapy 2

Prerequisites: 4409, 4410, 4411, 4420, 4430, 4443, 4450

Introduces basic principles of nutrition and diet therapy, including dietary allowances for various age groups, and socioeconomic, ethnic and religious food preferences.

4423 Medical Surgical Clinical Nursing I 3

Prerequisites: 4409, 4410, 4411, 4420, 4430, 4443,

4450

Co-requisite: 4421

Provides students with medical-surgical-clinical experiences, with emphasis on pre-and post-operative care, diabetic patients and those with impaired cardiovascular function; provides students with opportunity to perform nursing skills relative to Nursing Techniques and Care I and II (4411 and 4420) and selected skills from Nursing Techniques and Care III and IV (4430 and 4443).

4430 Nursing Techniques and Care III 3

Prerequisite: 4411

Studies regulation of food and fluid intake and elimination from GU and GI tract, with students taught to perform simple analysis on specimens, plus the importance of reporting abnormal findings to the RN; introduces writing of nursing care plans in non-complex situations.

4431 Medical Surgical Nursing II 4

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4423, 4430, 4443, 4450

Co-requisite: 4432

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions; discusses measures to prevent illness, management of disease through thyroid gland, and pulmonary function.

4432 Medical Surgical Clinical Nursing II 3

Prerequisites: 4409, 4410, 4411, 4420, 4423, 4430, 4443, 4450

Co-requisite: 4431

Provides students with medical-surgical-clinical experience, including care of patients with impaired gastrointestinal, thyroid and pulmonary function, provides further developmental skills relative to prerequisite courses.

4440 Maternal Health Nursing 3

A course which provides the student with information to meet the needs of both the mother and infant through understanding the maternity cycle and the growth and development of newborns.

4441 Personal Vocational Relationships 2

Correlates with specific activities of students; deals with human behavior; hospital organization, legalities of nursing, nursing organizations and employment for the Licensed Practical Nurse (LPN).

4442 Maternal Clinical Nursing 4

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4422, 4423, 4430, 4431, 4432, 4443, 4444, 4445, 4446, 4450, 4451, 4452

Co-requisite: 4440

Provides students maternal nursing experience, including caring for mothers in labor, delivery, and on the postpartal unit, as well as caring for the newborn.

4443 Nursing Techniques and Care IV 3

Prerequisite: 4430

Introduces students to some techniques used in administration of therapeutic agents; discusses role of LPN

and RN in relation to the administration of therapeutic agents as well as initiation of therapeutic action.

4444 Medical Surgical Nursing III 4

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4423, 4430, 4431, 4432, 4443, 4450

Co-requisite: 4445

Studies nursing care of adults, including study of etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions; studies measures to prevent illness, management of disease through use of therapeutic agents, and conditions related to musculoskeletal, urinary and reproductive function.

4445 Medical Surgical Clinical Nursing III 4

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4422, 4423, 4430, 4431, 4432, 4443, 4450

Co-requisite: 4444

Provides students medical-surgical clinical experience, introducing use of therapeutic diets in treatment of illness; includes care of patients with impaired musculoskeletal, urinary and reproductive function.

4446 Community Health Resources 2

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4423, 4430, 4431, 4432, 4443, 4450

Explores community health concerns and community agencies; includes guests from community agencies and field trips.

4450 Nursing Techniques and Care V 3

Prerequisite: 4443

Identifies physical, emotional and spiritual needs of aging, long term, chronically and terminally ill patients, role of clergymen and religious practices as they relate to health care, and introduces techniques used in preventing the spread of communicable disease.

4451 Medical Surgical Nursing IV 3

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4423, 4430, 4431, 4432, 4443, 4444, 4445, 4450

Co-requisite: 4452

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions; emphasizes measures to prevent illness, management of disease through use of therapeutic agents; discusses conditions related to neurological, integumentary, vision and hearing functions.

4452 Medical Surgical Clinical Nursing IV 3

Prerequisites: 4409, 4410, 4411, 4420, 4421, 4422, 4423, 4430, 4431, 4432, 4443, 4444, 4445, 4450

Co-requisite: 4451

Provides students medical-surgical clinical experience including implementation of community resources in dis-

charge planning; emphasizes care of patients with neurological, integumentary, vision and hearing impairments.

4453 Pediatric Nursing 3

A cluster of information appropriate to pediatric care presented in a lecture discussion course. Included are growth and development, congenital anomalies and pathophysiology specific to individuals from infancy through adolescence, deviations from normal function described by diagnostic testing, symptomatology and corresponding nursing action; group planning of holistic nursing care, nursing responsibilities for medical orders; drugs and diet therapy; also discussion of nursing action for rehabilitation.

4454 Pediatric Clinical Nursing 3

A clinical experience to provide the student an opportunity to care for selected pediatric patients. The growth development of the patient is considered as well as nursing care.

4460 Pharmacology I 2

An introduction to the fluids used in intravenous therapy, antibiotics, analgesics, sedatives, hypnotics and emergency drugs. Also discussed are drug action and reaction, correct dosage and methods of administration.

4461 Pharmacology II 2

This course deals with drugs utilized in the treatment of the circulatory, gastrointestinal, endocrine and respiratory systems. Also discussed are drug action and reaction, correct dosage and methods of administration.

RADIOLOGIC TECHNOLOGY

4609 Nursing Procedures for X-Ray Technicians 2

Techniques of basic nursing care provided by the radiologic technologist are presented, including patient/technician relationships, principles of asepsis, isolation and basic first aid.

4613 Radiation Physics I 3

An introduction to physics utilized in the production of x-rays, including laws of physics related to atomic structure, chemical properties and reactions, and electrical circuitry. Equipment and methods of generation and measurement of electricity are studied.

4620 Orientation to X-Ray Technology 4

The historical development of x-ray technology and the role and function of the Radiologic Technologist are discussed. Basic principles of x-ray tube, properties of radiation, film processing equipment, intensifying screens, terminology and introductory techniques of positioning of the chest and abdomen are provided. Procedures and practices of radiation protection are stressed.

4622 Radiation Physics II 3

Correlation of basic laws and principles of physics and radiation circuitry, x-ray production, measuring devices and units, photoelectric effect is presented. Equipment utilized in x-ray production and monitoring is studied.

4623 X-Ray Clinical Education I	5	laboratory testing while competency skills over Category 3 are tested. Skill maintenance over previous categories continues during clinical applications.
4624 Radiographic Positioning I	3	Positioning terminology and techniques as well as film evaluation are correlated to Clinical Category 1 including upper extremity, intravenous Pyelogram and gallbladder examinations.
4625 Principles of Radiographic Exposures I	3	Film construction, sensitometry and processing techniques are explored more thoroughly than in Orientation to X-Ray Technology (4620). Definition and effect of prime radiography factors related to the formulation of exposures are stressed.
4633 Radiographic Positioning II	2	Positioning terminology technique and film evaluation are correlated to Clinical Category 2 including lower extremity, upper GI, esophagus, small bowel and cardiac fluoroscopy studies.
4634 Principles of Radiographic Exposures II	3	Problem-solving exercises to demonstrate conversion factors which affect the elements of radiographic quality are stressed including Pediatric Techniques, Calibration, heat unit determination and technique chart construction are also presented.
4638 X-Ray Clinical Education II	6	Category 2 of the Competency Model is emphasized in laboratory testing while competency skills over Category 1 are tested. Supervised clinical experience is also included.
4642 Imaging Techniques	3	Theories, principles and demonstration (where possible) of current image modalities are presented including the Image Intensifier, tomography, video and cine camera, serial changers, subration technique, polaroid, thermography, ultra sound and xeradiography.
4643 Radiographic Positioning III	3	Positioning terminology, techniques and film evaluation are correlated to Clinical Category 3 including the vertebral column, bony thorax, colon, cystogram and IV cholangiogram examinations.
4648 X-Ray Clinical Education III	6	Category 3 of the Competency Model is emphasized in laboratory testing while competency skills over Category 2 are tested. A skill maintenance program is implemented while clinical application continues.
4650 Radiographic Positioning IV	3	Positioning terminology, technique and film evaluation of Clinical Category 4 including the cranium and special skull examinations and mammography are presented.
4655 X-Ray Clinical Education IV	6	Category 4 of the Competency Model is emphasized in
4661 Special Procedures	3	This course presents fundamental techniques of positioning and equipment for selected studies of the vascular, neurological, reproductive and other systems, pediatric and geriatric exams.
4668 X-Ray Clinical Education V	6	Category 4 of the Competency Model is finished in laboratory and undergoes testing. Skill maintenance in all previous categories and clinical applications continue.
4672 Radiobiology	3	This course presents theory and fundamental principles of the effects of ionization radiation upon living tissues. Review of dosage measurements, DNA structure and function, and cellular radiosensitivity are included.
4678 X-Ray Clinical Education VI	6	All category testing is completed. The student may begin final competency testing if he/she feels ready. The skill maintenance over all categories continues.
4685 General Examination Review	4	Review of program content is presented with emphasis on Anatomy, Physics, Exposure Principles and Positioning. Simulated American Registry tests are provided to prepare the student for the Certification Examination.
4688 X-Ray Clinical Education VII	6	Final competency testing occurs if student did not complete X-Ray Clinical Education VI (4678). Maintenance over all categories continues.
4697 Seminar for Radiologic Technicians	1	This elective course varies in content according to student/instructor ideas. Examples include: guest speakers, student reports from professional journals, explanation of the continuing education of the profession, CPR skills update, equipment maintenance problems.
Note: Progress from quarter to quarter is dependent upon successful completion of the Competency Model requirements in the clinical setting as well as a minimum 2.0 GPA of program courses (excluding electives) taken at the College.		
RESPIRATORY THERAPY		
4810 Basic Science	4	Studies the fundamentals and principles of chemistry, physics and mathematics related to respiratory therapy, introducing English and metric measuring systems and symbol systems; stresses general gas laws related to gas transport.
4812 Respiratory Therapy Science I	6	This course gives a brief history of respiratory therapy and acquaints the student with the principles and prac-

tices of oxygen administration, humidity, and aerosol therapy. Emphasis is placed on safety and equipment.

4813 Nursing Techniques 2-3

A basic course in nursing arts which includes patient needs, asepsis, vital signs, isolation techniques and charting.

4820 Cardiopulmonary Physiology 4

Prerequisite: 4812

In depth study of the cardiopulmonary system with emphasis on airway management.

4821 Respiratory Therapy Science II 6

Prerequisite: 4812

Students are acquainted with the principles and practices of mechanical respirators, airway management, and chest physiotherapy applied to respiratory therapy.

4822 Respiratory Therapy Applications I 5

Prerequisite: 4812

Studies various applications of respiratory therapy by observation, with students rotated through various clinical areas.

4823 Clinical Practicum I 6

Prerequisite: 4812

Students develop skills and knowledge by performing the various respiratory therapy tasks in clinical areas under supervision.

4830 Laboratory Data 3

Prerequisite: 4812

Co-requisites: 4820, 4821, 4831

Provides students with understanding of techniques for sputum collection, lung function testing and blood gas analysis.

4831 Clinical Medicine 4

Introduces etiology, symptomatology, diagnosis, therapeutics and prognosis of disease conditions related to respiratory therapy.

4832 Respiratory Therapy Applications II 5

Continues Clinical Practicum I (4823).

4833 Clinical Practicum II 9

Prerequisite: 4823

A continuation of Clinical Practicum I (4823).

4835 Respiratory Therapy Science III 6

Prerequisite: 4821

This course introduces the student to the practice of critical respiratory care, both of the adult and the infant. The student will study volume ventilators, pediatric ventilators, and the care of patients receiving mechanical ventilation.

4837 Pulmonary Pathophysiology

4

Prerequisite: 9354

Introduction to etiology, symptomatology, diagnosis, therapeutics, and prognosis of disease conditions related to respiratory therapy.

4841 Clinical Practicum III

13

Prerequisite: 4833

A continuation of Clinical Practicum II (4833).

4844 Cardiopulmonary Laboratory Diagnosis

4

Prerequisite: 4837

This course introduces to the student the function of the cardiopulmonary laboratory. The student will gain an understanding of basic pulmonary function tests and techniques. A portion of the course will cover electrocardiography and basic cardiac arrhythmias.

4845 Seminar

2

Co-requisite: 4841

This course will allow the student to prepare and present in depth case studies and reports from current literature to the faculty and his/her peers.



Trade and Technical

COURSE DESCRIPTIONS

AGRICULTURAL EQUIPMENT

5113 Principles of Internal Combustion Engines 2

Studies fundamentals of internal combustion engines, including 2 and 4-cycle engine theory, magnets, battery and thermal ignition, carburetors, fuel pumps, cooling and lubrication systems; also preventive maintenance and safety.

5114 Direct Current Fundamentals 2

Deals with electrical functions of all 3 fueled engines as related to starting, storage, charging, lighting and ignition components; also controlling and protective devices and safety precautions.

5115 Hydraulic Fundamentals 2

Studies the physical property of fluids and their control, the basic components of valves, pumps, cylinders, conduction, accumulators and cylinders, and multiplication of forces.

5116 Tractor Engines 3

Studies basic components and their purpose, including flywheel, crankshaft, cam shaft, connecting rod, piston, head-cylinder block, sleeves, water pump, oil lubrication pump, carburetor, fuel pump, distributor drive, governor and radiator design and purpose, as compared to diesel engines; also students will disassemble and assemble laboratory gasoline engines as means of comparison with diesel engines.

5123 Diesel Engines I 3

Deals with intake and exhaust systems of agricultural and industrial diesels, including fuel delivery systems and theory of thermal ignition; fuel, air and lubrication filtration and preventive maintenance required for each component; also students will disassemble and assemble laboratory diesel engines as a means of comparison with gasoline and L-P engines.

5124 Manual Transmissions 3

Studies sliding gear transmissions and related components of the power train, including clutches, differentials, final drives and power take off mechanisms as well as manual steering and brakes; also includes collar shift and synchromesh transmissions.

5125 Open Center Hydraulic Systems 3

Studies hydraulic system used on older tractors and today's smaller tractors and machinery, including gear and vane type pumps, spool and rotary valves, flow dividers, relief valves, single and double action cylinders, simple low horse-power hydraulic motors and preventive maintenance and safety.



5126 Closed Center Hydraulic Systems 3

Studies radial and axial piston type pumps, stroke control valves, accumulators, closed center rotary and spool valves, pressure control valves, direction control valves and volume control valves, with emphasis on preventive maintenance.

5127 Hydraulic Assist Transmissions 3

Studies hydraulic components of the main hydraulic supporting systems, including hydraulic assist steering, brakes, clutches, differential locks, power take off mechanisms and hydraulic assist transmissions, with emphasis on preventive maintenance.

5132 Diesel Engines II 3

Studies diesel pumps and injectors, their timing and permissible service during tune-up; studies laboratory pumps and nozzles as to function and purpose.

5133 Environmental Control 4

Studies natural resources in depth, including the current status of preservation; agriculture's responsibility in areas of soil, water and air pollution and technician's role.

5134 Parts Department Management 3

Studies the science of operating the parts department under accepted management procedures documented by successful dealers of the industry, including inventory control and turnover, and profit margins, with emphasis on obsolete parts and their management, and customer relations; also diagnosis of fill rate and emergency orders.

5135 Diesel Engines III 2

Employs dynamometer loading of a diesel engine to study thermal efficiency of engine with and without a turbocharger installed; engine fitted with intake and exhaust manifold vacuum-pressure gauges pyrometer, tachometer and manometer; also tune-up on dynamometer to original equipment manufacturer's specifications; emphasizes preventive maintenance.

5136 Hydrostatic Transmissions 3

Deals with components of systems, including variable flow hydrostatic pumps and motors, charge pumps, check valves, control valves, crossover relief valves, shuttle valves, swashplates and servo pistons.

5137 Service Department Management 3

Deals in operating the service department under accepted management procedure documented by successful dealers of the industry, with the selling of a purchased commodity—labor as the basis for course; includes recovered labor costs, incentive programs, scheduling shop flows, flat rate, shop tickets, merchandising and customer relations.

5138 Industrial Transmission 3

Concepts of the high torque-low speed characteristics of this transmission will be studied in conjunction with the torque converter and lock-out clutch for high speed-lower torque applications. Laboratory work will include

the set-up of preload and end play of input and output shafts and cluster gears. The Technical Manual of the Transmission will be followed.

5142 Lawn and Garden Equipment 3

Studies equipment powered by internal combustion engines of less than 35 horsepower; also includes plows, disks, harrows, rakes, tillers, seeders, fertilizer spreaders, sprayers, standby alternators, irrigation pumps and mowing equipment with preventive maintenance and safety emphasized.

5144 Crawler Undercarriages 2

Studies service requirements for the 13 main components of a crawler undercarriage, including servicing of flush and counterbored track links and the track master link; diagnosis of undercarriage alignment as well as track alignment; emphasizes preventive maintenance and safety.

5145 Farm Machinery II 3

Studies set-up, adjustment, predelivery performance and calibration of components related to planters, drills, chemical and fertilizer machinery, including cultivation machinery; emphasis on preventive maintenance and safety.

5146 Fuels, Lubricants and Coolants 3

Brings into focus the fuel requirements and specifications for each of the 3 fuels used in internal combustion engines, with the lubricant specifications specified in the operator's manual studied in relation to published specifications as determined by the American Petroleum Institute; also studies coolant service and requirements; emphasis on preventive maintenance.

5147 Bearings and Seals 3

Studies in detail friction and anti-friction bearings and dust and liquid seals, including bearing and seal installation for each type of bearing and seal, and proper preload and endplay of bearings; emphasis on proficiency of installation as well as preventive maintenance.

5148 Belts and Chains 3

Studies belt types and load rating along with proper installation as to alignment of belt pulleys and tightness of belts, with chain types and sprocket alignment as well as chain sag discussed; emphasis on daily preventive maintenance.

5149 Tires and Tracks 2

Studies off-the-road tires, including size, composition codes, service and maintenance; emphasis on track maintenance instruction to operators and preventive maintenance and safety.

5154 Farm Machinery I 3

Studies primary and secondary soil tillage tools, including set-up, adjustment and predelivery performance of plows, disks, harrows, multiple purpose tools and tiller, with emphasis on operational safety precautions.

5156 Hydrostatic Hydraulics Systems 3

Studies theory of fluids under high pressure but limited

flow rate, as used in closed-loop positive displacement components; also hydrostat motor and pump circuits along with controlling components; emphasis on preventive maintenance.

5157 Agricultural and Industrial Equipment Sales

2

Studies art of selling new and used equipment at a profit, including trade downs, wash out sales and scrapping procedures; cost of doing business, pricing, sales incentive and follow-up; equipment auctions and jockey's role in price determination; and cold canvassing as means of increasing equipment sales.

5158 Diesel Engines IV

2

Studies V-8 diesel, pump injector, single unit, super-charger, two cycle diesel theory, ameroids and servicing in course for industrial servicemen.

5159 Torque Converters

2

Studies multiplication of torque at sacrifice of speed, including pumps, turbines, stators and lockout clutches on component units; emphasis on operational and maintenance requirements as tools of instruction to operator of units.

5160 Chain Saw Maintenance

4

To provide basic instruction in fundamentals, operating principles, trouble-shooting, maintenance and repair on two-cycle chain saws.

5162 Diesel Injection Nozzle Service

2

Studies in detail injection nozzle types and service, including procedure for timing and cleaning orifices, lapsing machined areas, cracking pressure and delivery rate adjustment, proper installation into head and proper torque specification.

5163 Internal Combustion Engines Laboratory

3

Studies in depth internal combustion engines typically used in the agricultural equipment industry.

5164 Farm Machinery III

3

Deals with harvesting and handling machinery common to area farms, including mowers, hay rakes and balers, grain and corn combines, forage harvesters, grain dryers and related crop handling equipment including augers and elevators; emphasis on operation safety.

5165 Diesel Pump Calibration and Service 2

Amount and rate of delivery of diesel injection pumps will be calibrated on a diesel pump test stand; studies over-haul and diagnosis of pump wear, plus assembly and setting to pump specifications on the pump stand and running advance of injection; emphasizes preventive maintenance.

5166 Suburban Garden Equipment I

3

Studies equipment powered by internal combustion engines of less than 35 horsepower, plus related equipment including plows, disks, harrows, rakes, tillers, seeders, fertilizer equipment; emphasis on preventive maintenance and safety.

5167 Customer Relations

3

Demonstrates how the agricultural equipment technician must be highly proficient in customer relations and should master basic skills in this area.

5168 Agricultural Safety

3

Covers in depth those aspects of safety which the agricultural equipment technician can most effectively use.

5169 Preventive Maintenance

2

Studies a broad range of equipment and special maintenance problems which must be systematically addressed to prevent undue costs in keeping costly equipment functional and efficient.

5170 Farm Machinery IV

3

A course dealing in fundamentals of tractor operation including hitching, preparation, starting and stopping under load, gear selection, speed of field operation, controls, ballast, accessories, implement attachment and operation in hazardous conditions.

5180 Farm Machinery V

3

A study of efficient farm production including tractor work capacity, machinery production capacity, expected tractor and machinery depreciation, custom work, leasing, ownership, operating costs and long-range plan of replacement.

5182 Farm Machinery VI

3

A course dealing in the mixing, grinding, conveying, weighing, measuring and dispersing livestock feed. The equipment needed to dispose of waste in the liquid, slurry and solid form will be studied along with preventive maintenance and safety in using it.

APPLIED FIRE SCIENCE

5313 Introduction to Fire Technology

3

Introduces fire problems and broadly touches various phases of the fire technology field, including characteristics and behavior of fire and hazardous properties of materials; uses NFPA Fire Protection Handbook as text.

5314 Fire Apparatus I

3

This course will cover all fire fighting apparatus, aerial ladder, aircraft fire apparatus, pumper, elevating platform, maintenance, hose and types, driving, emergency driving, dry and wet roads.

5322 Electricity

3

Studies basic concepts required of electrical workers, with emphasis on concept of series circuits, parallel circuits, series parallel combinations circuits and Ohm's Law, plus basic definition of electromotive force, current and resistance.

5323 Fire Apparatus II

3

Includes construction and operation of aerial ladders, aerial platforms, specialized equipment and maintenance; uses IFSTA Manual 106 as text.

5324 Fire Department Hydraulics I

3

Fire Department Hydraulics deals with problem solving

relative to public water, supply and distribution systems—watermains, hydrants, valves, fittings, and the utilization of pumper for adequate supply and pressure.

5325 Fire Department Hydraulics II 2

A continuation of Fire Department Hydraulics I (5324).

5332 Fire Fighting Strategy and Tactics I 3

This course allows the student to make knowledgeable decisions in regards to fire ground tactics, both from a battalion and company level, and provides insight into unusual circumstances often encountered in the fire service.

5333 Fire Alarm and Protection Equipment 3

Presents fundamentals of municipal and local alarm systems; heat, smoke and flame detectors, telephone, teletype and radio systems, portable fire extinguishing equipment, sprinkler systems, and protective alarm and detection systems.

5334 Fire Fighting Strategy and Tactics II 2

A continuation of Fire Fighting Strategy and Tactics I (5332), with emphasis on the tactical simulator.

5342 Hazardous Materials I 3

Reviews basic chemistry, storage, handling laws, standards and fire fighting practices pertaining to hazardous materials.

5343 Rescue Practices and Procedures 3

Presents rescue practices, including fire rescue and auto extraction, procedures on aircraft rescue and fire fighting, and the fire department's responsibilities in protection of evidence at the scene of an aircraft incident.

5350 Applied Chemistry 2

Studies principles of theory of chemistry, including solutions, acids and bases, chemical kinetics and equilibrium, plus an introduction to organic chemistry, biochemistry and industrial chemistry.

5351 Industrial Safety and Fire Control 3

A study of the principles of combustion; classes of fire and characteristics of combustibles, explosions and backdrafts, principles of fire control, methods of heat transfer, flashpoint burning point, ignition temperature, vapor density, use of tools and equipment, safety procedures and protective clothing and breathing apparatus.

5352 Hazardous Materials II 3

Continues study of hazardous materials.

5353 Fire Investigations 4

Covered are the responsibility of fire investigation, fire cause and loss, collection and preservation of evidence, and determining fire origin. Emphasis is on the application and assistance of various scientific aids to the investigation.

5360 Fire Service Inspection 4

The organization and function of fire prevention and

inspection; topics include hazard recognition, recommendations for corrective action, engineering to solve fire hazards and the enforcement of codes and laws, state and city. Also covers the effects of public relations on fire prevention.

5361 Fire Service Organization and Management 4

This course will provide the fire fighter and fire officer with a better understanding of fire safety problems and administrative methods of getting work accomplished, organization, and relations with other agencies.

5362 Fire Department Specifications 4

Consists of preparation of specifications for apparatus, hose and minor equipment, and fire station specifications.

5363 Fire Prevention 4

Studies organization and function of the fire prevention organization, including inspections, surveying and mapping procedures.

5364 Legal Problems in Fire Service 4

Includes laws governing organization and operation of fire departments, liability-mutual aid, arson, fire prevention, building construction, etc.

5391 Management Essentials 4

Covers the nature of management, employee productivity and satisfaction, using small work groups as found on individual fire companies; skills of planning, decision making and control.

5393 Building Materials 3

Covers basic architectural and structural construction materials and their applications, with building materials considered for usability and cost feasibility.

5394 Aircraft Fire Fighting I 3

This course is designed to provide the information necessary for fire department personnel to effectively accomplish the various tasks involved in aircraft fire rescue.

5395 Aircraft Fire Fighting II 3

A continuation of Aircraft Fire Fighting I (5394).

5396 Ship Board Fire Fighting 3

Studies fire fighting for land-base companies, hookups, equipment used, procedures, use of water, foams and support systems on ships.

5397 Radioactive Emergencies 3

Includes radiation hazards, fire fighting procedures in generating plant transportation, and emergencies for fire service and safety people.

ARCHITECTURAL DRAFTING

5421 Basic Architectural Drafting 3

An introductory course involving architectural drafting equipment, lettering, isometric, oblique, pictorial, perspective and free-hand sketches.

5422 Residential Construction Materials 3

Studies basic materials for residential construction and their application, with consideration to usability and cost feasibility.

5423 Commercial Construction Materials 3

Materials used for commercial and industrial building construction. Consideration is given to economics.

5430 Light Construction Presentation Drafting

3

Prerequisite: 7522

Develops drawings for a residence, including size and space relationships.

5431 Light Construction Layout Drafting

3

Prerequisite: 7522

Includes preparation of working drawings, including foundation and floor plans, wall sections and plot plan, climate control and electrical plans.

5432 Mechanical and Electrical Equipment

3

An introductory course dealing with mechanical and electrical systems within a structure design. Plumbing, climate control and electrical systems will be studied as an integrated system.

5433 Light Construction Detail Drafting 3

Prerequisite: 5431

Includes preparation of working drawings, including interior elevations, window and door details with the appropriate schedules and details of special built-in features.

5440 Medium Construction Presentation Drafting

3

Prerequisite: 5433

Develops presentation drawings for a building using masonry units, with study of size and space relationship and codes as the design basis.

5441 Medium Construction Layout Drafting

3

Prerequisite: 5433

Prepares working drawings, including foundations and floor plans, roof plan, wall sections and plot plan; also climate control, plumbing and electrical systems.

5442 Medium Construction Detail Drafting

3

Prerequisite: 5443

Prepares working drawings, including exterior and interior elevations, window and door details with the appropriate schedules and details of special built-in features.

5443 Electrical Equipment

3

Prerequisites: 5432, 5440

Studies electrical components used in the construction industry. Involves the calculations and design of electri-

cal systems and their effects upon space, structural and material selections.

5450 Heavy Construction Presentation Drafting

3

Prerequisite: 5433

Develops presentation drawings for a building using masonry and steel construction, with study of size and space relationships and codes as the design basis.

5451 Heavy Construction Layout Drafting

3

Prerequisite: 5433

Prepares working drawings, including foundations, floor and roof plans, wall sections and plot plans; also climate control, plumbing and electrical systems.

5452 Estimating

3

Prerequisite: 5422, 5423

Includes basic and fundamental principles of "taking-off" quantities of building materials as required by building construction contractor; also fundamental concepts readily applicable when quantity "take-off" from a set of plans is prepared.

5453 Heavy Construction Detail Drafting 3

Prerequisite: 5433

Prepares working drawings, including exterior and interior elevations, window and door details with appropriate schedules and details of special built-in features.

5460 Team Project Presentation Drafting

3

Prerequisite: 5433

Develops presentation drawings for industrial or residential building as approved by the instructor, with students formed into teams to provide atmosphere of "the world of work."

5461 Team Project Layout Drafting

3

Preparation of working drawings including: foundation, floor and roof plans, wall sections and plot plans. The climate control, plumbing and electrical systems are included.

5462 Team Project Detail Drafting

3

Prepares detailed drawings, including exterior and interior elevation window and door details, with appropriate "schedules" and details of special built-in features.

5463 Structural Design and Drafting

3

This course introduces the practical application of the theories learned in Statics (7551) and Strength of Materials (7552) as they apply in the architectural and structural engineering fields. Part of the course is devoted to the design of simple footings, foundation walls, steel columns, beams, roof systems as well as wooden trusses. The remainder of the course is to be devoted to the design and drawing of structural connections and joints as they pertain to structural shop drawings.

5470 Business Presentation Drawing	4	5502 Criminal and Civil Law I	4
Consists of students, functioning as a team representing various agencies assimilating and computing data as needed, completing a set of working drawings for either light industry or an office building as approved by instructor.		The purpose of this course is to explore major problems of the criminal law viewed as a device for controlling socially undesirable behavior. It is intended to give the students a working knowledge of the basic questions of public policy involved in the administration of criminal justice and of the legal principles of determining criminal and civil liability, in the light of theories advanced to justify punishment and other methods of correction. The course includes a consideration of vital constitutional issues, including self-incrimination, search and seizure, wire tapping, coerced confessions, right to counsel and conduct of trial.	
5471 Surveying Theory	3	5511 Criminal and Civil Law II	4
Presents theory covering fundamentals of surveying, proper use and care of basic surveying equipment, including level and transit.		The course concerns the legal protection afforded in civil procedures against interference by others with the security of one's person, property or intangible interests. Three fundamental theories of liability emerge: intentional interference, negligence, and strict liability. The influences of theories and underlying social and economic factors is studied in the context of recognized categories of tort liability, particularly assault, battery, false imprisonment, interference with peace of mind, negligence, trespass to property, nuisance, fraud, and other misrepresentation, defamation and invasion of privacy. Through these illustrations the course seeks to develop an understanding of the law's search for basic principles to govern the resolutions of conflicts arising out of human relationships.	
5472 Surveying Field Problems	2	5512 Security Administration	4
Prerequisite: 5471		This course covers the organization, administration and management of security and plant protection units, policy and decision making, personnel and budgeting, programs in business, industry and government including retailing, transportation and public and private institutions, and private guard and alarm services.	
5473 Architectural Rendering	3	5513 Administration of Justice	3
Presents introduction, history and review of pictorial types of drawings, study of light and color, rendering media and application of different techniques and media by practical exercises.		This course is a survey of the evolution of justice from earliest times, developed historically, with particular emphasis on Western justice and American justice. It includes the roles placed by the judiciary with emphasis on due process and on the constitutional guarantees.	
5474 Plat Mapping	3	5514 Principles of Interviewing	3
Studies land boundary relationships with respect to common domain system of surveying, with emphasis on latitude and departure system of drawing layout, areas determination and use of aerial photographs.		The focus of this course is on interviewing of victims, witnesses, informants and complainants as a communicative relationship. Techniques for professionally acceptable questioning of suspects and persons in custody are also covered.	
5475 Topographic Map Drafting	3	5515 Bank Security	4
Gives students experience in topographical surveying, methods of establishing grades and estimating quantities required for cuts and fills.		A study of the principles and practices of security measures for banks and other financial institutions and the preparation of rules establishing minimum standards under current federal and state legislation encompass this course.	
5476 Business Principles	3	5516 Campus Security	4
Presents fundamental economics and basic principles of business and industry, with emphasis on economic and business principles involved in building construction and architectural design field, including architect-client relationships, architect-contractor relationships and operating finances of the architectural organization.		A study of the security requirements at all levels of edu-	
5477 Model Building	3		
Entails small scale three-dimension construction of student's drafting projects, including customer presentation for appearance, function, landscaping and structural design.			
5478 Specifications and Codes	3		
Considers contracts and specifications as they relate to plans, building codes and actual construction, with basic relationships between specifications and working drawings considered from legal and working standpoint.			
SECURITY AND LOSS PREVENTION			
5501 Introduction to Security	4		
The historical, philosophical and legal basis of security is covered. The role of security and the security individual in modern society; the concept of professionalism; a survey of the administrative, personnel and physical aspects of the security field.			

cational institutions is covered. Security's role in problems involving student discipline, vandalism, use of drugs, theft and theft control through an education program, demonstrations, riots, occupation of buildings, maintaining the freedom of movement and control of personal liberties, liaison with civil authorities, traffic control and intelligence gathering are all emphasized. Training of campus police to deal with students, first aid and emergency services, and physical security controls using alarm devices, video, surveillance, etc., encompass the remaining topics.

5517 Computer Security 4

Basic security concepts of providing protection for the computer facility are the main core of this course. Techniques are included for access control, storage and handling of data and emergency procedures. Covered also are physical protection of the area and data, utilization of alarms and surveillance systems, as well as implementation of security procedures. Protection of information in cold storage from unauthorized access is also developed.

5518 Hospital Security 4

Included in this course are: the function of protection in the health industry; medical security administration including study of health care providers; trends in hospital law; security from injury, fire and loss in the medical world; security methodology for safeguarding specialty areas; the security roll in mass casualty management and emergency preparedness; the concept of professionalism; community liaison; and patient attitudes toward security.

5519 Transportation Security 4

This course encompasses a study of the various areas of transportation security such as trucking, railroad, air and ship; methods of protection against theft, pilferage and hijacking; the preparation of shipping orders and manifests and the concealment of the identity of valuable cargo as effective security measures; the economics of transportation security and the fine balance between investment for security and potential loss are also presented.

5520 Environmental Security 4

The relationship of man to his physical environment; ecological principles; public health; topics of current importance including air pollution, potable water, waste disposal, communicable disease, poisoning and toxicity, radiation with particular emphasis on community action programs provide the basic text for this course.

5521 Physical Security 4

The concept of physical security integrated with management systems; physical security requirements and standards; study of inanimate aspects, including alarm and surveillance devices; study of animate aspects of protection; costing, planning and engineering are all covered in this course.

5522 Safety and Fire Prevention 4

Principles and practices of safety; management of the safety program; interpretation and application of safety regulations; fire prevention and control; property conservation; occupational hazards and personal safeguards are areas discussed in the classroom.

5523 Commercial/Retail Security 4

The operation of security departments including functions of mercantile establishments; dishonest employees, shoplifters, management and public relations, receiving, shipping and warehousing, special laws and procedures all provide chapters of discussion within the commercial and retail security course.

5530 Principles of Loss Prevention 4

This course includes an overview of the functional operations of various specialized areas of security covering theft and risk control, security surveys and loss prevention management in proprietary and governmental institutions.

5540 Industrial Fire Protection 3

The implementation of fire loss prevention programs within the structure of an industrial organization, techniques of hazard analysis, risk management, administrative procedures, economics of fire protection, training and motivation, emergency planning, survey of fire protection equipment and application of industrial hazards and the use of fire codes and standards provide the core of data for this course.

5550 Criminal Investigation and Laboratory Techniques 3

Coordinated lectures and laboratory experiences in the fundamentals of investigation, techniques of crime scene recording and search, collection and preservation of evidence, modus operandi, follow-up and case preparation and methods used in security investigations are provided through directed study.

5560 Criminology 4

This course is basically a study of criminological theory, criminal and delinquent behavior, including the variations, ramifications and measures of preventive control and treatment based upon sociological methods.

5561 Current Security Problems 3

The focus of this course is on an analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances and natural and man-made disasters.

AUTO BODY REPAIR

5601 Basic Body Repair I 2

The students focus on characteristics of body metals and familiarization and installation of moldings, ornaments and fasteners.

5602 Basic Body Repair II

This course is a shop course with emphasis on the care and use of hand and power tools and equipment with emphasis on tool and shop safety; includes analysis of damaged sheet metal.

5603 Basic Body Repair III

Studies advanced basic body repair with emphasis on grinding, picking, filing and plastic applications related to minor damage repair.

5604 Basic Body Repair IV

Introduces students to skills necessary in preparing automobile for painting, including cleaning, masking and sanding.

5605 Auto Body Power Tools

The student will learn to diagnose any and all problems concerning the use and application of power tools.

5606 Auto Body Hand/Hydraulic Tools

The student will be able to determine what hand tools are needed to complete repairs. Also the proper maintenance and usage of the tools.

5607 Basic Body Repair III—Practicum

This course is supplemental to Basic Body Repair III (5603).

5608 Basic Body Repair IV—Practicum

This course is supplemental to Basic Body Repair IV (5604).

5609 Basic Body Repair I—Practicum

This course is supplemental to Basic Body Repair I (5601).

5611 Collision Damage Repair I

Provides students with knowledge and understanding needed to analyze extensive body damage, determine what tools are needed, and procedures used to replace panels.

5612 Collision Damage Repair II

Continues panel replacement fundamentals with emphasis on developing skills needed in replacing extensively damaged panels.

5613 Collision Damage Repair I—**Practicum**

This course is supplemental to Collision Damage Repair I (5611).

5614 Collision Damage Repair II—**Practicum**

This course is supplemental to Collision Damage Repair II (5612).

5615 Basic Body Repair II—Practicum

This course is supplemental to Basic Body Repair II (5602).

5620 Frame and Chassis I

Increases students' knowledge of frame and chassis nomenclature including front suspension and rear axle; emphasizes tools and frame machines used in repair.

5621 Frame and Chassis II

A continuation of Frame and Chassis I (5620), with emphasis on conditions found in frame damage; includes frame gauges, team gauges, and other measuring devices.

5622 Frame and Chassis III

Develops skills in attaching car to frame machine using proper equipment, with emphasis on correction of minor frame misalignments.

5623 Frame and Chassis IV

Emphasizes correcting major frame damage, inspections, analyses and procedures for restoring alignment of body structure and unibody automobiles.

5624 Auto Body Welding I

Studies applications of basic welding techniques in replacement and repair of panels, with techniques peculiar to automotive body repair also covered.

5625 Auto Paint Shop Practice I

Develops auto painting with emphasis on material and equipment handling.

5626 Auto Body Sheet Metal Alignment

This course covers alignment of sheet metal, doors, trunks, and glass. Body sealing, maintenance and rattle elimination is also included. The student will gain experience in aligning all body panels and glass for appearance, operation and finishing (sealing) of the part.

5627 Auto Paint Shop Practice I—Practicum

This course is supplemental to Auto Paint Shop Practice I (5625).

5628 Frame and Chassis III—Practicum

This course is supplemental to Frame and Chassis III (5622).

5630 Collision Damage Appraising

Studies use of estimation guides, procedures for itemizing damage, interpreting abbreviations, part numbers, and conversion tables for time and money; emphasizes visual and physical inspection of damage, recording on estimate sheet in proper sequence, figuring correct cost for parts and materials, and obtaining correct total.

5631 Upholstering

Studies basic techniques of automobile interior refinishing along with study of spring construction, filling and fabrics; develops manipulative skills necessary through practice of various projects on seats, panels and arm rests.

5632 Auto Paint Shop Practice II

The theoretical and practical aspects of final finishing procedures for complete car refinishing and spot repairs.

5633 Aluminum Panel Fabrication and Repair

The course is designed to give the student a general knowledge of the tools, materials, and processes used in fabricating and repairing aluminum panels.

**5634 Auto Paint Shop Practice
II—Practicum** 1

This course is supplemental to Auto Paint Shop Practice II (5632).

5635 Frame and Chassis II—Practicum 1

This course is supplemental to Frame and Chassis II (5621).

5636 Auto Paint Refinishing. 2

A continuation of auto painting with emphasis on the complete refinishing of the auto; treating the auto as a complete unit.

5637 Custom Paint Refinishing 2

A continuation of auto painting with emphasis on the metallic finishes, air brush work, working up new stripings, blending of colors, and the first steps of art work.

5638 Glass Installation 2

This course focuses on the different types of automobile glass and their usage. Students will learn how to remove and install front and rear glass, install and adjust side glass, bond the rearview mirror support, and how to properly use rubber channel and synthetic rubber adhesive.

5639 Fiberglass/Plastic Repair 2

A course designed to acquaint students with the various types of fiberglass and plastic materials used in auto body repair. Both interior and exterior applications are covered.

5640 Auto Paint Refinishing—Practicum 1

This course is supplemental to Auto Paint Refinishing (5636).

AUTOMOTIVE SERVICE

5801 Engine Tune-Up and Testing 3

This course focuses on the techniques for testing both conventional and electronic ignition system, the fuel system, emission controls, engine detailed testing and proper tune-up of the engine.

5811 Automotive Chassis and Suspension—Practicum 1

This course is supplemental to Automotive Chassis and Suspension (5812).

5812 Automotive Chassis and Suspension 3

Covers various frame designs used in construction of automobile, including suspension components; also repair and service of suspension components such as ball joints, idler arms, tie rod ends, etc.

5813 Automotive Braking Systems 3

Studies automotive braking systems, including hydraulic theory, with emphasis on service and repair of all brake components, including booster units, master cylinder, wheel cylinder, caliper rebuilds and drum and rotor service.

5814 Automotive Front End Alignment 3

Co-requisite: 5812

Studies fundamentals of wheel alignment and wheel balance, including each of the five wheel alignment angles, steering wheel positioning, vehicle tracking and wheel balancing principles in detail.

5817 Automotive Braking Systems—Practicum 1

This course is supplemental to Automotive Braking Systems (5813).

5821 Engine Theory, Design and Construction 3

Covers internal combustion engines, including theory of operation, design characteristics, construction and diagnosing of problems.

5822 Engine Tools and Equipment 3

Familiarizes students with tools, machines and equipment needed for rebuilding internal combustion engines.

5823 Basic Electricity 3

Introduces basic electrical theory, automotive components and circuits, emphasizing construction, function and principles of operation of the battery.

5824 Front End Alignment—Practicum 1

This course is supplemental to Automotive Front End Alignment (5814).

5825 Fuel and Carburetion—Theory and Circuits 3

Studies automotive fuels, carburetor fundamentals, circuits and diagnosis procedures.

5826 Fuel and Carburetion—Overhaul 3

Prerequisite: 5825

Emphasizes shop procedures for trouble-shooting, repairing, and replacing or overhauling fuel system components.

5827 Conventional Ignition Systems 3

Studies conventional breaker point ignition system components, functions, principles of operation and testing.

5828 Electronic Ignition Systems 3

Prerequisite: 5827

Exposes students to basic principles of electronics, with emphasis on electronic ignition systems used in today's automobiles.

5829 Electronic Ignition Systems—Practicum 1

This course is supplemental to Electronic Ignition Systems (5828).

5832 Starting and Charging Systems—Testing 3

Prerequisite: 5823

Studies construction, function, and principles of operation and testing of electrical units of the automobile; includes starting motors, batteries and charging systems.

5833 Starting and Charging Systems—Overhaul

Prerequisites: 5823, 5832

Emphasizes developing a comprehensive understanding of all electrical components and systems with emphasis on problem diagnosis and bench repair of units.

5834 Engine Overhaul

Prerequisite: 5822

Covers tear-down, inspection, measuring, cleaning, machining, repair and proper assembly techniques used during engine overhaul, including cooling systems.

5835 Manual Transmission Overhaul

3

Studies theory, operation, trouble-shooting and repair of power train of vehicles as it leaves engine and is delivered at wheels, with emphasis on operation and maintenance of clutches and manual transmissions.

5836 Engine Overhaul—Practicum

1

An opportunity for further skill development directly related to teardown, inspection, measuring, cleaning, machining, repair, and proper assembly techniques used in engine overhaul, including cooling and lube systems.

5837 Introduction to Automotive Service

3

Provides introduction to the automotive industry and an overview of the automotive service subjects designed to give students a professional mental set of the industry. This is an elective course available to degree students and non-majors.

5838 Engine Overhaul II—Practicum

1

This course is supplemental to Engine Overhaul (5834).

5839 Engine Overhaul III—Practicum

1

This course is supplemental to Engine Overhaul (5834).

5840 Engine Overhaul IV—Practicum

1

This course is supplemental to Engine Overhaul (5834).

5841 Differential and Rear Axle Overhaul—Practicum

1

This course is supplemental to Differentials and Rear Axle Overhaul (5843).

5842 Automotive Diesel Engine Overhaul I

3

Covers 2 and 4-stroke diesel engine, including review of automotive diesel engine theory, operation of the valve train and repair of same; operation of cylinder block components and repair of same; operation of lube, fuel, and cooling systems and components, and repair of same; engine rebuilding techniques and diagnosis as it applies to engine rebuilding.

5843 Differentials and Rear Axle Overhaul

3

Continues study of power train as it leaves engine and is delivered at wheels, with emphasis on universal joints, differentials, and rear axle assemblies.

5844 Advanced Tune-up—Practicum

1

3 This course is supplemental to Advanced Tune-up (5845).

5845 Advanced Tune-up

3

Prerequisite: 5852

Familiarizes students with importance and necessity of trouble-shooting and pin-points diagnostic procedures, with emphasis on operational principles of automotive engine and components supporting good performance; uses laboratory for diagnosis and evaluation.

5846 Vehicle Inspection and Safety

2

Studies various federal and state regulations concerning automotive safety devices and proper operations, with emphasis on techniques of overall vehicle inspection to determine compliance with existing federal and state laws.

5847 Air Conditioning—Theory, Service and Components

3

Studies theory, function of components, and normal minor service maintenance.

5848 Air Conditioning—Diagnosis and Repair

3

Prerequisite: 5847

Covers diagnosis of air conditioning malfunctions and repair, replacement and overhaul of various components.

5849 Automotive Diesel Engine Overhaul II

3

Continues Automotive Diesel Engine Overhaul I (5842)—(should be offered in conjunction with same).

Covers diesel engine rebuilding techniques and procedures in greater detail, with emphasis on lab practical work.

5850 Automotive Diesel Engine Theory

3

Covers the automotive diesel engine, including theory of operation, design characteristics, component nomenclature, component relationships, component location and basic diagnostic techniques.

5851 Automotive Accessories

3

Prerequisite: 5823

Presents basic study of function, construction, principles of operation and trouble-shooting techniques for varied accessories of automotive vehicles, including maintenance of lighting and signalling systems, headlight dimmers, electrically-operated safets devices, buzzers, flashers and electric motor-operated devices.

5852 Engine Tune-up

3

Prerequisites: 5823, 5825, 5826, 5827, 5828, 5832, 5833

Studies operational principles of automotive engine and components that support good performance, including diagnosis, evaluation and complete tune-ups performed in laboratory.

5853 Engine Tune-up—Practicum	1	5864 Automotive Parts Handling	3
This course is supplemental to Engine Tune-up (5852).			
5854 Automatic Transmission Theory and Operation	3		
Studies automatic transmissions, including construction, function and principles of operation, with emphasis on power flow within transmission.			
5855 Automatic Transmission—In-Car Service	3		
Prerequisite: 5854			
Provides understanding of automatic transmission operational diagnosis and preventive maintenance servicing.			
5856 Automatic Transmission—Bench Overhaul I	3		
Prerequisite: 5855			
Stresses practical-type work on dead transmissions and their components.			
5857 Automatic Transmission—Bench Overhaul II	3		
Prerequisite: 5856			
Studies theory and practical work including diagnosis, correction and testing malfunctions on live transmissions.			
5858 Automatic Transmission Bench Overhaul I—Practicum	1		
This course is supplemental to Automatic Transmission Bench Overhaul I (5856).			
5859 Motorcycle Maintenance	3		
Covers general motorcycle maintenance, with emphasis on preventive maintenance as well as tire changing and engine tune-up; includes pre-ride inspection, clutch and brake adjustments, battery service and changing fork oil; provides opportunity for students to perform maintenance operations on own motorcycles, although owning a motorcycle is not a prerequisite.			
5860 Emissions Control	3		
This course is designed to give the student basic knowledge and skills in the diagnosis, repair, and maintenance of the components of the various emissions control systems and their purpose and function.			
5861 Automotive Blueprint Reading	4		
Presents fundamentals of blueprint reading and sketching as they apply to various automobile components.			
5862 Comprehensive Diagnosis and Procedures I	3		
Provides work environment typical of automotive service centers for advanced skill practice and development, with vehicles diagnosed, evaluated and given approval of inspector; includes performance of major and minor repair to journeyman's standards with minimal supervision and instructor assistance.			
5863 Comprehensive Diagnosis and Procedures II	3		
A continuation of Comprehensive Diagnosis and Procedures I (5862).			
5865 Service Organization and Management	3		
Studies methods of work and time scheduling in service shop and techniques of obtaining maximum work efficiency from a group of mechanics and specialists, including general principles of service station sales, service and customer relations.			
5866 Occupational Safety and Health for Auto Service Environment	4		
Introduces principles of occupational safety and health in a survey course covering basic principles and techniques (required for OSHA majors and suitable for management and supervisory certificate students).			
5867 Basic Shop Practice	2		
Studies fundamental shop procedures, safety, tools and machines.			
5868 Small Engine Maintenance	3		
Covers theory of operation on small engines, service and adjustment, concentrating on skills of diagnosis and total repair or rebuilding of small engine.			
5869 Recreational Vehicle Maintenance	3		
Involves study of special characteristics and maintenance problems of recreational vehicles.			
5870 Common Auto Sense I	2		
An introduction to the automobile of today. Included will be routine maintenance procedures, methods of economical operation, elimination of objectionable noises, interior and exterior appearances, maintenance and warranty regulations.			
5871 Common Auto Sense II	2		
An introduction to the operational systems of the automobile. Terminology of the system components and basic service procedures will be covered.			
5872 Diesel Refresher	1		
Due to the increase of diesel engine applications in the modern automobile and commercial fields, there is a specific need for periodic inspections and tune-up of the diesel engine. This course is designed to familiarize the student with the various diesel engines and tune-up procedures.			
5873 Automatic Transmission Bench Overhaul II—Practicum	1		
This course is supplemental to Automatic Transmission Bench Overhaul II (5857).			
5874 Comprehensive Diagnosis II — Practicum	1		
Provides extended experience in a work environment			

typical of automotive service centers for advanced skill practice and development in vehicle diagnosis and repair.

BUILDING CONSTRUCTION

6001 Carpentry Fundamentals

Probes and illustrates traditional and progressive skill needs of introductory students in Building Construction Technology; also defines and illustrates current methods of construction, researches the trends of building and reviews the history of this trade area.

6002 Construction Tools and Skills

Provides students with opportunity to study various tools and become skilled in the operation, maintenance and safety factors of each.

6003 Construction Materials

Provides information about materials used in the building industry; includes in-depth study of the manufacturing process and systems of purchasing.

6004 Safety and First Aid

Acquaints students with basic principles of safety and first aid techniques in the trade and industry, including procedures and practicum in environmental emergency, and effective safety protection.

6011 Floor and Wall Layout and Construction

Develops necessary skills for laying out floor and wall systems, including how they are designed and constructed.

6012 Roof Construction

Studies various roof systems, how they are laid out and constructed; emphasis on use of the framing square.

6013 Blueprint Reading I

Provides instruction and practice in study of working drawings and application of understandings from the "print" to the "work"; includes relationship of view and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.

6014 Electrical Wiring Fundamentals

Studies basic electricity, including electron theory, Ohm's Law and proper use of electrical measuring instruments; also simple series and parallel circuits, switching devices and fusing.

6015 Residential Wiring

Covers practice of residential wiring, including electrical service, metering equipment, lighting, switches, outlets and other components common to residential wiring, installation and maintenance.

6020 Electrical Blueprint

Prerequisite: 6015

Covers basic blueprint problems electricians encounter in a commercial building and develops skills necessary to translate blueprint information into proper methods of installation.

6021 Carpentry—Advanced Framing

3

Prerequisites: 6011, 6012

Studies floor, wall and roof layout and construction, with emphasis on required skills and time factors of each area in framing.

6022 Plumbing—Design and Installation I

3

Covers plumbing techniques for working with pipe and fittings, how to rough in plumbing, install drainage, water systems, fixtures, water heaters, all within the scope of the plumbing code.

6023 Blueprint Reading II

3

Develops proficiencies in interpretation of more complex blueprints including notations, conventional symbols and dimensions, with students introduced to basic mechanical drafting skills.

6024 Plumbing Fundamentals

3

Gives beginners clear understanding of the home plumbing system and how it works, including necessary tools, water supply systems, acceptable materials for water, drainage, fixtures and many items of code.

6025 Plumbing Blueprint

3

Develops skills to read, understand and interpret blueprints (residential plans), including symbols, using an architect's scale, pipe drawing and isometric pipe layout.

6026 Advanced Skills in Masonry

3

Prerequisite: 6036

Covers building of corners, wall reinforcing, masonry supports, chases, small one-flue chimneys, corbeling and wall copings, with emphasis on residential veneering, cavity wall construction, concrete reinforcement, and special finishes.

6027 Masonry Estimating and Specifications

3

Prerequisites: 6013, 6023, 6036

Presents specifications, line and symbol identification, dimensioning and scaling, with working drawings studied and applied; emphasis on residential blueprints and their relation to masonry profession.

6028 Plumbing Design and Installation II

3

A continuation of Plumbing—Design and Installation I (6022).

6029 Plumbing Design and Installation III

3

This course is a study of residential and commercial electric hot water heating systems, private well water systems and the basic electricity related to these systems.

6030 Electrical Estimating

3

Prerequisite: 6020

Studies building plans and specifications, how to make

takeoffs and compile quantity surveys, current pay scales in the electrical field; also materials and labor factors.

6031 Electrical—Commercial Wiring

Prerequisites: 6014, 6015

Introduces wiring methods and materials in conformance with the National Electrical Code; covers basic fundamentals of mechanical and electrical installations with emphasis on tool usage and material selection.

6032 Exterior Trim

Develops required skills for finishing exterior of a building, including installing the cornice, windows, doors and various types of sidings.

6033 Interior Trim

Develops ability to accurately measure, cut and fit moldings, paneling and finish flooring; also how to hang doors, install hardware and cabinets.

6034 Millwork

Combines courses of cabinetry and millwork for students who wish to receive only basic knowledge on each area.

6035 Plumbing Estimating

Prerequisites: 6022, 6024, 6025

Studies estimating cost of complete plumbing system; discusses compiling quantity surveys and takeoff from blueprint and specifications; also labor, types of material and necessary equipment.

6036 Masonry and Concrete Fundamentals

Prerequisites: 6002, 6003

Covers materials and methods of construction, building layout, preparation of building site, footings and foundations, wall construction, including form construction and erection; emphasis on basic tools and materials used in masonry field, physical properties of brick and concrete block.

6041 Special Problems in Masonry Construction

Prerequisite: 6036

Studies chimneys, stone and rock masonry, metal performed fireplaces, archways and supporting openings in masonry, and design of chimneys and their sizing.

6043 Sheet Metal

A study of metal framing materials used in residential and light commercial construction. A "hands-on" class of (aluminum, steel and vinyl) exterior siding and cornice installation.

6044 Survey and Measurement

Introduction to the profession of surveying. How to use the transit, read angles, land descriptions, restrictions and legal problems. Understand topographical maps and their uses.

6045 Special Problems in Concrete

Prerequisite: 6036

Covers different concrete finishes, reinforcing, footing

designs and waterproofing construction techniques, with jointing requirements, design mixes and curing procedures studied and applied.

6046 Aluminum Siding Application and Residential Metal

3

Develops skills in the installation of aluminum siding, soffit, cornice, rain gutter, and covering of trims and windows. Additional items covered include raised seam and corrugated metal roofing, metal carports, awnings, metal storage buildings, ventilators, and flashings.

6047 Cabinetry

3

Develops knowledge and skills in building of cabinets, including methods of construction, necessary hardware and installation; also making countertops.

6048 Industrial Wiring

3

Prerequisites: 6014, 6015

Covers wiring methods and materials, and use in conformance with National Electrical Code, with emphasis on AC/DC machines and controls.

6049 Commercial Installations—Plumbing

3

Studies in depth field of commercial plumbing, including areas of schools, office buildings, churches, etc., with emphasis on code requirements and commercial blueprints.

6050 Advanced Masonry and Design

3

Prerequisite: 6036

Studies design of masonry building applications and planning of a structure using masonry units, including fireplace construction techniques and selection of materials.

6051 Remodeling and Addition

3

Problems of remodeling residential and light commercial buildings. Problems of materials, utilities, permits, and financing as well as construction.

6052 Cabinetry and Millwork

3

Combines courses of cabinetry and millwork for students who wish to receive only basic knowledge in each area.

6053 Electrical Installation

3

Prerequisites: 6014, 6015

Studies practical application in wiring and design, including circuit and conductor calculations, motor circuits and controls, transformer and entrance layouts, illumination design, machine tool hookup and circuiting.

6054 Electrical and Plumbing—Mechanical Installation

3

Develops skill and confidence of performance in a practical application course in electrical and plumbing equipment, installation, trouble-shooting, servicing and repairing in areas from residential to commercial within the scope of code.

6055 Mechanical Installation

3

Studies operation of mechanical equipment in air conditioning, installation of complete systems using this equipment, including heating, cooling, humidification

and air cleaning; emphasizes coordination of carpentry work with installation of mechanical equipment, including air conditioning, heating and plumbing.

6056 Estimating and Specifications—Carpentry

Prerequisites: 6013, 6021, 6023

Studies various systems used in estimating cost of a building, with emphasis on labor, material takeoff and pricing; with intensive study of specifications, what they are, and how they are used.

6057 Advanced Survey

Advanced survey includes the study of subdivision layouts, solving area problems for angles, length and area by means of trigonometry. Restrictions, legal descriptions, easements, building lines and zoning of properties are studied.

6058 Introduction to Woodworking

This course is designed to familiarize the student with various employment opportunities associated with the woodworking industries. Also familiarizes the student with various types of woodworking machinery, and can be helpful in providing experience in the proper procedures to be used in the operation of such machinery.

6059 Principles of Woodworking

This course is designed for the student to acquire experience in use of hand tools and machines. Student will start with fundamental tool processes on woodworking projects and proceed to advanced work as he acquires the necessary skills.

6060 Advanced Residential Design

Studies residential floor plans and elevations; basic arrangements analyzed to fit contemporary living patterns; cost, privacy, convenience and efficiency coordinated with needs; exterior styles compared as to costs and aesthetic values; also multiple housing, duplex arrangements, apartments and condominiums, with floor plans, elevations and a perspective drawing made to incorporate conclusions reached from above research.

6061 Basic Theory of Painting and Staining

Covers application of various paints and stains in construction industry, with emphasis on proper selection of materials for various decors and preservation functions.

6062 Wall and Floor Coverings

Studies modern materials and techniques of inside floor and wall coverings, including how different materials affect decor; instructions on how to assess the durability and maintenance of the materials and techniques commonly used in correct installation procedures.

6063 Introduction to Heavy Equipment

Studies equipment technology of various machines, including backhoe tractors, bulldozers, trenchers, forklift, bobcat, screetchrete, vibrator, compactors and air hammers; also capabilities and limitations of machines studied along with cost and maintenance; also observation and actual student operation of equipment in field.

6064 Landscape Architecture and Design 3

Prerequisites: 6013, 6023

Includes problems of residential, commercial and recreational landscaping, with formal and informal design evaluated considering desired use of specified areas; includes patios, fencing, plantings, pools, topography, orientation, layout, latest trends, color, shape, scale, form, function and costs.

6065 Cabinetry I

3

Designed to introduce students to the basic skills and technology of cabinetmaking focusing on cabinet designs and layout, terminology, tools, and skill requirements.

6066 Interior Decorating

3

Studies general factors influencing quality buying for interiors, including materials and trends in relationship to needs of consumers.

6067 Cabinetry II

3

Designed to acquaint students with the skills and knowledge required in the construction of kitchen cabinets. Students will design, layout, and fabricate a base cabinet demonstrating proper use of tools and materials.

6068 Carpentry for Cabinetmakers

3

Introduces students to the required skills and basic knowledge of carpentry. Students will study floor, wall and roof systems, interior trim and remodeling, terminology, construction methods and layout of various projects.

6069 Millwork I

3

Presents the skills and knowledge used in producing wood products associated with millwork technology. Students are expected to set-up and operate machinery, and develop skills in making moldings, door frames, picture frames, window sashes, etc., using joints, fasteners, hardware, and wood materials.

6080 Auxiliary Building Design and Construction

3

This course complements the residential building construction courses by developing carpentry skills required in the construction of garages, storage barns, wood decks and patios, gazebos, and fences.

6081 Fabrication—Modular Techniques

3

A study of the concepts of modular construction including pre-fabrication, fabrication, and the erection of modular units assembled at the job site. Students are trained to build small and large "jigs" for project fabrication.

6082 Building Additions

3

A specialized course focusing on the design and construction of building additions including the study of matching styles, materials, floor level and overhangs, connecting roofs, slopes, foundation, wiring, heating, and workmanship required in attaching an addition to an existing structure.

6083 Construction Organization and Procedures	3	specifically related to occupational area in a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis (course taken by permission only).
Acquaints students with the basic management concepts of construction scheduling and includes such topics as material ordering and inventory, subcontractor and work scheduling, finance, building codes, inspection and permits.		
6087 Millwork II	3	
Continuation of Millwork I (6069).		
6088 Cabinetry III	3	
Designed for cabinetry students to further develop skills in the design, layout and construction of cabinets. Students will be required to design and fabricate a complete set of kitchen cabinets including the construction and mounting of the counter top.		
6089 Advanced Projects in Cabinetry and Millwork	3	
Designed to further elevate the skill level of cabinetry students requiring them to design and construct designated projects under limited supervision.		
6090 Advanced Projects in Building Construction I	3	
This course is a continuation of Advanced Projects in Building Construction (6094). It is designed to further evaluate students' knowledge and skills, requiring students to construct designated projects with limited supervision. Prerequisites being all Carpentry courses, Blueprint Reading and Mathematics courses.		
6091 Carpentry—Light Commercial	3	
Introduces students to the concept and carpentry skills required in light commercial construction. Closely related to residential construction, the course focuses on the methods and materials used in office buildings, clinics, small churches, and other non-residential structures.		
6092 Carpentry—Heavy Commercial	3	
Designed to develop knowledge and skills in carpentry in the area of heavy commercial construction. Students will study the construction techniques used in factories, schools, shopping centers, and other large commercial structures requiring steel framing and form construction.		
6093 Special Problems in Building Construction	3	
Probes many problems of construction industry, both existing and potential; studies methods of solving these problems (course taken by permission only).		
6094 Advanced Projects in Building Construction	3	
Evaluates students' knowledge and skills, requiring students to construct designated projects with limited supervision, prerequisites being all framing and interior and exterior trim courses (course taken by permission only).		
6095 Construction Research	3	
Provides students with special projects or case studies		
6096 Construction Foreman Supervisory Training	2	
The student learns the responsibilities of the supervisor in his management of the crew members; what is expected of each and how to adjust to the role of supervisor.		
6097 Advanced Projects in Building Construction II	3	
Continuation of Advanced Projects in Building Construction (6094). Students participate in a class project requiring the layout and construction of a small building under limited supervision. Students must have completed all math, blueprint reading, and carpentry courses.		
DIESEL POWER TECHNOLOGY		
6213 Electrical Fundamentals	2	
A lecture discussion type course covering the fundamentals and principles of operation, electricity and electrical circuits as applied to the electrical systems used on gasoline and diesel powered units. Components to be covered will be those in the charging and cranking circuits.		
6214 Diesel Electrical Laboratory I	3	
The method of operation repair and adjustments of all types of charging and cranking systems used in the diesel field. Testing alternators and transistor regulators on factory type equipment with repairs being made as needed.		
6215 Diesel Electrical Laboratory II	3	
A continuation of Diesel Electrical Laboratory I (6214).		
6220 Diesel Engines I	3	
Covers 2 and 4-cycle diesel engines, including construction and principles of operation, valves, sleeves and bearings in detail; laboratory work includes building a diesel engine.		
6221 Diesel Electrical Systems I	2	
Prerequisite: 5823		
Covers diesel ignition systems, starting systems, generators and alternators, with laboratory work on diesel engines as related to the respective systems.		
6222 Diesel Electrical Systems I—Practicum	1	
Provides extended practice and skill development in analyzing and repairing ignition systems, starting systems, and charging systems on diesel engines.		
6224 Tune-Up Procedures Theory	4	
A lectured demonstration course covering technical and operating principles of the ignition system along with complete tune-up procedures. Learning where to find important specifications and how to apply them to laboratory work to live tune-ups.		

6225 Tune-Up Shop I	3	domestic diesel engines and includes practice on live engines.
To give students actual experience in properly testing and tuning all types of machines. Largely the application of modern testing equipment for efficiency and speed in engine tune-up and troubleshooting covering accessories and other electrical units.		
6226 Tune-Up Shop II	3	6241 Heavy Duty Brakes Systems 2
A continuation of Tune-up Shop I (6225).		Prerequisite: 5813 Studies heavy duty braking systems, including fundamentals of air brake systems and components, with emphasis on service and repair of all brake components, troubleshooting and diagnosis.
6230 Diesel Engines II	3	6242 Heavy Duty Chassis and Suspension System 3
Prerequisite: 6220 An in-depth study of diesel engine block and related components, with laboratory work including engine overhaul.		Studies various frame designs used in construction of a truck, including suspension components, with students gaining experience in repair and service of suspension components such as king pins, tie rods, springs and shocks.
6231 Fluid Power Fundamentals	3	6243 Diesel Fuel Injection Pump Theory 4
Covers fundamentals of fluid power including principles, functions, terminology and symbols of hydraulics and pneumatics, with emphasis on understanding of basic hydraulic principles and equipment; development of hydraulics, advantages and problems in hydraulics setups, and physical properties of liquids; principles of operation and constructional features of hydraulic pumps, motors and valves and types and uses of seals, packings and tubing; and applications of hydraulic components in typical circuits and industrial equipment.		Introduction to the different types of fuel systems, including various types of combustion chambers that are found in industrial and agricultural engines. Complete understanding necessary before servicing can begin in the shop area.
6232 Diesel Pump and Fuel Systems I	3	6244 Diesel Fuel Injection Pump Laboratory I 3
Covers diesel super and turbo chargers, governors, cooling systems and fuel injectors, with laboratory work on diesel engines as related to the respective systems.		Exposure to all modern types of fuel injection. Disassembling, testing and operation of fuel injection test equipment. Acquaints the student with combustion requirements, thermal efficiency on two or four stroke cycle diesel engines.
6235 Diesel Engine Theory I	4	6245 Basic Shop Practices 2
A study of all the heavy duty industrial engines in the field today with detailed slides on the various engines that the student will have to troubleshoot and rebuild. Covering equipment manuals in detail to acquaint the students with various important specifications pertaining to each engine.		A continuation of Diesel Fuel Injection Pump Laboratory I (6244).
6237 Diesel Engine Rebuilding Shop I 3-5		6247 Diesel Pump and Fuel Systems II 3
The student repairs and rebuilds heavy duty engines which are found in the trucking industry and in the construction field. Systematic maintenance procedures and gaining familiarities with the many special factory precision tools for two and four stroke cycle diesel engines are emphasized.		A continuation of Diesel Pump and Fuel Systems I (6232) including the diagnosis, repair, rebuilding, and calibration of fuel pumps and systems used in the diesel industry.
6238 Industrial Diesel Engine Rebuilding Shop II	3	6250 Failure Analysis 2
A continuation of Diesel Engine Rebuilding Shop I (6237).		Introduces the principles of analyzing component failure in all areas of the diesel industry. Recommended as a comprehensive diagnostic course for the last term before graduation.
6239 Diesel Engine Rebuilding Laboratory III	3	APPLIANCE REPAIR—OPTION IN HEATING, AIR CONDITIONING AND REFRIGERATION
A continuation of Diesel Engine Rebuilding Shop I (6237) and Industrial Diesel Engine Rebuilding Shop II (6238).		
6240 Diesel Engine Diagnosis	3	6310 Laundry Equipment Applications 8
Prerequisite: 6230 Covers diagnosis and correction of malfunctions of		Practical diagnostic approach to the servicing of commercial and domestic electrical laundry appliances (washer and dryer).
		6311 Customer Relations 1
		Emphasis is placed on skills required to deal successfully with the sophisticated customer of today.
		6312 Principles of Bimetallic, Hydraulic Temperature and Pressure Controls 6
		Includes thermo switching, thermostatic oven control,

high-heat self-cleaning ovens, and heating and cooling control.

6313 Kitchen Product Applications 7

Practical approach to kitchen appliance diagnosing, including ranges, compactors, dishwashers and disposals.

6314 Domestic Refrigeration Fundamentals 6

Fundamentals of domestic refrigeration, study of refrigerants and compressors, the use of charging and evacuation equipment, and checking of temperature and pressure with gauges.

6315 Refrigeration Product Applications 6

The diagnostic approach to servicing refrigerators, freezers and window air conditioners.

6316 Basic Electricity 3

Includes series and parallel circuit, Ohm's Law, magnetism, wiring schematics, timer sequences and the electric fractional H.P. motor, and basic control circuits.

ELECTRONICS COMMUNICATIONS

6410 Basic AC/DC Circuits 4

A survey of basic electrical principles and laws in DC and AC circuits including such topics as current, voltage, resistance, power, inductance, capacitance and transformers.

6411 Basic Electronics 4

A survey of the basic principles of semiconductor devices and their application in electronic circuits. Topics include diodes, bipolar junction transistors, field effect transistors, amplifiers, oscillators and power supply circuits.

6412 DC Fundamentals I 3

Provides working knowledge of electrical principles and laws in DC circuits, voltage, current and resistance relationships on an applied basis; also stresses component identification and proper use of lab test equipment.

6413 Fabrication 3

Provides practical experience in techniques of electronic construction, fabrication and assembly, with emphasis on proper care and use of shop tools and test equipment.

6414 DC Fundamentals II 3

A continuation of DC Fundamentals I (6412) with introduction to inductance and capacitance.

6420 Introduction to Data Processing and Computers 3

Includes both an overview of the technology and data processing and computers, as well as the specific electronic components and circuitry.

6423 AC Fundamentals I 3

Introduces AC circuit principles with emphasis on impedance and phase relationships.

6424 Trouble-Shooting Techniques 3

Studies techniques of logic trouble-shooting of electronic circuits and simple systems, with emphasis on systematic diagnostic method.

6425 AC Fundamentals II 3

Continues AC Fundamentals I (6423) with emphasis on resonant and AC filter circuits.

6426 Electronics Drafting 3

Studies techniques used in diagramming electronics circuits and systems, with emphasis on both proper techniques for drawing diagrams, as well as skill in reading and interpreting diagrams and electrical blueprints.

6434 Introduction to Active Devices 3

Introduces basic structure and principles of operation of vacuum tube and transistor devices.

6435 Electronics Circuits I 3

Studies use of active and passive components in power supply, oscillator and amplifier circuits.

6436 AM Radio 3

Studies AM receiver principles and circuits, developing understanding of amplitude modulation and demodulation.

6438 FM Radio 3

Studies FM receiver principles and circuits, developing an understanding of frequency modulations, demodulation and multiplex.

6440 CET Preparation 2

Prepares students to become certified electronics technicians.

6441 FCC 3rd and 2nd Class License 4

Prepares students for acquiring respective government license in concentrated course of study.

6442 FCC 1st Class License 4

Prepares students for passing applicable federal test and acquiring the 1st class license.

6443 Indiana State Radio and Television License 4

Prepares students to acquire state license in especially designed course.

6444 Advanced Radio Circuits 3

FM stereo multiplexing, tape player, and CB transceiver principles and circuits are studied. The function and operation of IC components used in radio systems is emphasized. Laboratory experience includes alignment and troubleshooting of AM/FM/FM Stereo, tape players and CB radios.

6445 Monochrome Television 3

An in-depth study of television circuitry with emphasis on the principles of cathode ray tubes, scanning and synchronizing methods and video amplification. Includes principles of antennas and transmission lines.

6446 Integrated Circuits 3

Introduces various classifications and categorizations of linear and digital integrated circuits.

6447 Special Semi-Conductors	3	Introduces theory and operation of semi-conductor devices other than bipolar transistor; also includes opto-electronic components, FETs and other special semi-conductor devices.
6448 Color Television	3	Studies specialized principles and circuits used in color television receivers, emphasizing similarities and differences between color and monochrome.
6449 Closed Circuit Television	3	A study of closed circuit TV principles with emphasis on the closed circuit TV camera operations.
6450 Television Trouble-Shooting	3	Provides advanced level of skill development in diagnostic procedures, with emphasis on service procedures and installation, and adjustment of color and solid-state TV receivers.
6451 Communications Electronics I	3	Includes study of AM, FM, pulse, SSB and other modulation systems; also basics of facsimile systems.
6452 Communications Electronics II	3	Studies further 2-way communication equipment, including commercial and CB systems, installation, maintenance and trouble-shooting.
6453 Communications Electronics III	3	Studies commercial AM, FM and television broadcast equipment and antennas involving both operation and maintenance procedures; includes a study of link transmitters.
6454 Electronics Circuits II	3	Continues Electronic Circuits I (6435) with emphasis on pulse and logic circuit fundamentals, including basic waveforms of the nonsinusoidal variety frequently used in pulse and logic circuits.
6455 Circuits Analysis	3	Consists of circuits and systems analysis using equivalent circuit principles and theorems.
6456 Advanced Trouble-Shooting	3	Covers trouble-shooting procedures and techniques related to transmitters and receivers.
6457 Electro-Mechanical Controls	3	Studies basic electro-mechanical control systems related to industrial electronics, including basic and pilot control devices; also circuit layout, industrial schematics, reduced voltage starters and multi-speed controllers.
6458 Magnetic Recording	3	Covers operation principles of recording, including maintenance, alignment and operation.
6459 Business Practices	2	Studies general business practices associated with the successful operation of technical service enterprises.
6460 Microwave and Radar	3	A study of microwave generators, waveguides, relay
		systems, components and applications, including klystrons, magnetrons and gas diodes.
6461 Antennas and Wave Propagation	3	The study of receiving and transmitting antenna and arrays, transmission lines, wave guides and coupling circuits.
6462 Audio Electronics	1	A detailed yet practical study of audio systems of both home entertainment and commercial systems. Includes study of pick-ups, amplifiers and speakers.
6463 Linear Integrated Circuit Timers	3	Designed to train students in the use of linear integrated circuits to obtain a digital astable and monostable operation.
6464 Phase Lock Loop	3	Introduces students to the various elements that make-up the phase-locked loop. Focus is on the technology of applying the phase-locked loop to the reception of communication signals.
6465 Active Filters	3	A study of low-pass, high-pass, band pass, and notch filters using operational amplifiers. Focus is on the design of multiple pole filters and the characteristics of Butterworth and Chebyshev filters.
ELECTRONICS TECHNOLOGY		
6520 Microprocessors I	3	An introduction to the microprocessor including the architecture of a typical processor. The course includes a review of number systems and codes, also computer arithmetic. Addressing modes, programming model and instruction set are introduced.
6521 Microprocessor Applications	3	A continuation of Microprocessors I (6520) emphasizing the application and interfacing of microprocessor systems. The hardware specifications of principal system components such as the CPU, memory and I/O interfacing are covered.
6522 D/C Equipment and Controls	3	This course will cover: D/C power in industry, electromagnetism, D/C generators, D/C motors, D/C relays, D/C controllers, D/C power supplies, SCR principles and D/C maintenance practices.
6524 Troubleshooting Techniques	3	The techniques of logical troubleshooting of electronic circuits and simple systems will be studied. Emphasis will be placed on signal tracing and signal injection methods. Communications skills are also included.
6525 Introduction to Test Equipment	3	Introduces the proper use of lab and shop test equipment for trouble-shooting purposes.
6526 Introduction to Audio Electronics	3	A detailed yet practical study of audio systems of both home entertainment and commercial systems. Includes study of pick-ups, amplifiers and speakers.

6527 Peripherals I

3

An in depth study of basic commonly used peripherals used with typical small machines. Includes: keyboards, LED displays, cassette recorders, Tarbell and teletype.

6530 Test Equipment Maintenance

3

Studies repair and calibration procedures of electronic test equipment, including vom's, VTVM's, signal generators and oscilloscopes; also study and use of test equipment standards.

6531 Independent Study

1-3

Consists of students pursuing approved investigation related to major programs following prescribed scientific method, with evaluation based on a written report (may be repeated for additional credit).

6532 Three-Phase Systems

3

The course will cover: three-phase motor principles, induction motors, synchronous motors, multi-speed dual voltage motors, three-phase motor maintenance, A/C motor starting principles, three-phase motor controllers, alternators, auxiliary generator systems and power distribution systems.

6533 Microprocessors II

3

A further study of microprocessors including how to interface it with simple I/O devices as well as a study of the particular microprocessor support devices family. Includes study of monitor programs, memory and machine language programming.

6534 Industrial Interfaces

3

A study of how to design circuits to interface microprocessors with the analog world. Includes how to convert energy produced by pressure, force, position, temperature, etc., into an electrical voltage or current which the microprocessor can deal with.

6535 Peripherals II

3

A continuation of Peripherals I (6527) including a study of: paper-tape devices, credit card readers, CRT displays and floppy disk devices. This includes a study of each device and the interfacing of such devices with typical small machine I/O port devices.

6536 Programming

3

A practical course which reviews machine language and flow charting but goes further into programming using: symbolic, basic and assembly language. A study of editors is also included.

6538 Rotating Machines I

3

Introduces common industrial rotating machines, both single and polyphase.

6539 Rotating Machines II

3

Continues Rotating Machines I (6538) with emphasis on power distribution.

6540 Medical Electronics I

3

Prerequisite: Approved physiologic course from Health Occupations program.

Introduces bio-electrical potentials including blood flow and pressure, respiration, and cardiac output, with prim-

ary concerns on conversion and measurement of these physiological signals.

6541 Medical Electronics II

3

Continues study of medical electronics equipment, including ECG, EKG, EEG, defibrillators, heart monitors, and other monitoring equipment.

6542 Medical Electronics III

3

Studies medical support systems such as x-ray equipment, respiration, analyzers and their maintenance; includes preparation for licensing and certification.

6543 Basic Industrial Electronics

3

Studies characteristics of various transducers and their applications.

6544 Introduction to Industrial Controls

3

Studies power switching and controlling devices including thyristors and thyratrons.

6545 Solid State Motor Controls

3

A basic review of Ohm's Law, capacities reactance, inductive reactance, electronic symbols, single phase and three-phase power is included. Also covered is the basic instruction of various solid state linear and static devices and their applications in polyphase systems. An introduction to transient suppression, opto isolators, electromechanical relays, and solid-state relays in industrial systems.

6546 Electrical Maintenance

3

Develops electrical maintenance programs for typical industrial and commercial situations, including study of related motors and test equipment for preventive and trouble-shooting application; emphasizes protection of life, property and production through proper use of test equipment.

6547 Linear Integrated Circuits

3

Application

A continuation of Integrated Circuits (6446) emphasizing the circuit applications of linear ICs such as op amps, voltage regulators and other special analog circuits.

6548 Programming Examples

3

This course provides the student with extensive programming opportunities in areas to include: games, practical business and home programs. This involves the use of a respectable machine with suitable peripherals. It is recommended that basic language be used for the programming.

6549 National Electrical Code

2

This course covers the National and Local Electrical Codes for wiring and apparatus. It covers wiring design and protection, methods and materials and general use of equipment and hardware, and the use of tables and diagrams for the solution of practical wiring problems.

6550 Electro-Mechanical Controls

3

Studies basic electro-mechanical control systems related to industrial electronics, including basic and pilot control devices such as circuit layout, industrial schematics, reduced voltage starters and multi-speed controllers.

6551 DC Fundamentals III	3	6613 Introduction to Public Relations	3
Continues DC Fundamentals II (6414) with emphasis on super-position, the Venin and Norton's Theorems.		Introduces techniques used to promote not only the company, but the individual within the company structure.	
6552 AC Fundamentals III	3	6614 AC-DC Circuits	3
Continues AC Fundamentals II (6425) with emphasis on vacuum-tube theory and circuits.		Discusses AC-DC theory from a circuit level, with emphasis on cable applications.	
6553 Industrial Electronics I	3	6615 Rules and Regulations CATV	2
Continues Introduction to Industrial Controls (6544) with emphasis on systems and circuits.		Covers regulations affecting operation of a cable company, with emphasis on FCC rules and regulations.	
6554 Industrial Electronics II	3	6620 System Design	3
Studies process controls and service systems.		Prerequisites: 6610, 6611	
6555 Medical Electronics and Safety	3	Involves general overview of CATV systems, including trunks, distribution systems and subscriber drops; also basic system parameters.	
A study of Medical Electronics with emphasis on basic electronics and electronic devices as applied to medicine. Includes study of electrical safety and care, and use of electronic equipment.		6621 Basic Residential Construction	3
6562 Digital Principles I	3	Introduces hardware used in residential construction, including active and passive devices, and support and entrance equipment.	
Introduces basic combinational logic through use of Boolean algebraic expression.		6622 Cable Methods and Splicing	3
6563 Digital Principles II	3	Introduces cable handling methods and preparation for fittings; also cable characteristics.	
Continues Digital Principles I (6562) with emphasis on counters, clocks, registers and arithmetic circuits.		6623 Cable Construction Techniques	3
6573 Micro Skills for Watch Repair I	4	Introduces actual cable system construction techniques, including lead design, cascadeability, and system length.	
The basic concepts of miniaturized timekeeping are introduced, including repair and adjustment of typical watch elements. Fundamental measurement techniques are also introduced.		6630 Mechanics of System Design	3
6574 Advanced Electro-Mechanical Controls	3	Concerns typical parameters used in system design, including active and passive devices, tilt, powering, S/N, and cross modulation.	
Studies advanced electro-mechanical control systems related to industrial electronics.		6631 Solid State Fundamentals	3
6577 Digital Principles III	3	Prerequisites: 6610, 6614	
Studies advanced digital systems, including memory and D/A and A/D conversion.		Introduces basic theory behind operation of solid state devices faced in CATV equipment, including diode, transistors, power supplies, and amplifiers.	
6578 Digital Applications	3	6632 Trouble-Shooting Fundamentals I	3
Studies interfacing and uses of various digital devices, circuits and systems.		Studies techniques of logical trouble-shooting of electronic circuits and simple circuits.	
6583 Electrical Safety for Hospitals	4	6633 Safety Techniques	3
A study of electrical safety regulations as set forth by the Accreditation Manual for Hospitals. Further knowledge is gained in electrical wiring, National Electrical Code and equipment calibration.		Includes safe climbing, safety equipment, first aid and shock.	
6610 Introduction to Electricity	3	6634 Electronic Circuits	3
Introduces basic concepts behind electricity and electronics, including AC and DC basic theory.		Covers actual circuitry found in cable systems, including headend and outside plant equipment.	
6611 Fundamentals of Cable Television	3	6635 Trouble-Shooting Fundamentals II	3
Discusses basic principles behind cable television, including financial aspects, design theory and how systems operate.		Prerequisite: 6632	
		Introduces typical malfunctions, including AM and FM radios and television problems.	
		6640 CATV Trouble-Shooting Techniques	3
		Prerequisites: 6632, 6635	
		Covers techniques used in trouble-shooting CATV	

CABLE TELEVISION

6610 Introduction to Electricity	3	6611 Fundamentals of Cable Television	3
Introduces basic concepts behind electricity and electronics, including AC and DC basic theory.		Discusses basic principles behind cable television, including financial aspects, design theory and how systems operate.	

systems, including trunk and distribution system techniques.

6641 Headend Operations 3

Covers headend design and layout, antenna design, maintenance alignment leads and interference.

6642 Preventive Maintenance Practices 4

Studies in depth preventive maintenance practices.

6643 Professional Cable Practices 3

Introduces ethics and standard practices within CATV field, including planning, controlling, hiring, training and evaluation, plus filing and setting up preventive maintenance schedules.

HEATING, AIR CONDITIONING & REFRIGERATION TECHNOLOGY

7112 Heating Fundamentals 3

Covers fundamentals of the heating phase of air conditioning; includes types of heating systems, combustion process, heat flow, temperature measurements, fuels and basic control devices.

7113 Basic Electricity for Air Conditioning 3

Covers basic electricity, including theory of current flow, Ohm's Law, current, voltage and resistance measurements, proper use of electrical measuring instruments; also includes switching circuits, magnetism, transformers, fusing and wire sizing; series, parallel and combination circuits and an introduction to pictorial and schematic wiring diagrams.

7114 Basic Mechanics and Shop Techniques 3

Introduces safe and proper use of tools and torches used to install copper tubing, copper and steel piping; also includes selection of proper materials for specific application to soldering, brazing and basic oxy-acetylene gas welding apparatus.

7115 Basic Electricity for Air Conditioning—Practicum 1

This course is supplemental to Basic Electricity for Air Conditioning (7113).

7123 Air Conditioning and Refrigeration Fundamentals 3

Introduces study of compression system used in mechanical refrigeration and air conditioning, including refrigeration cycle, compressors, receivers, evaporators, condensers, metering devices, refrigerants and their identification; also includes temperature conversions, absolute temperature, gas laws and an introduction to basic mechanical service procedures used throughout the industry.

7124 Heating Service (Gas and Oil) . 3

Covers gas and oil heating units for residential applications, including methods used in analyzing mechanical and electrical problems on residential equipment, and pictorial and schematic diagrams applicable to residential heating units.

7125 Motors and Motor Control 3

Covers various types of motors, including single phase capacitor start, capacitor start and run, shaded pole, tap wound and 3-phase; introduces procedures to select proper motor for a specific application, and diagnosis of motor problems, with emphasis on motor control and protective devices.

7126 Air Conditioning and Refrigeration 3

Continues Air Conditioning and Refrigeration Fundamentals (7123), compressors, condensers, receivers, metering devices, evaporators, and other system components. Includes a continuation of the basic mechanical service procedures used throughout the industry.

7127 Heating Service (Electrical & Hydronic) 3

Covers various electric and hydronic heating systems used in residential applications; also covers methods used in analyzing electrical and mechanical problems in residential heating units, including study of control systems and pictorial and schematic diagrams.

7128 Heating Service (Gas and Oil) — Practicum 1

This course is supplemental to Heating Service (Gas and Oil) (7124).

7129 Cooling Service (Electrical) — Practicum 1

This course is supplemental to Cooling Service (Electrical) (7133).

7133 Cooling Service (Electrical) 3

Covers service procedures for residential air conditioning systems and low voltage (24 volts) control wiring with emphasis on schematic and pictorial wiring diagrams.

7134 Cooling Service (Mechanical) 3

Continues Cooling Service (Electrical), (7133) troubleshooting, procedures for cleaning up a system after compressor burnout, also covers suction and liquid line filters and strainer-dehydrators.

7135 Electrical Circuits and Controls 3

Covers electrical controls, gas controls, oil controls, cooling controls and system controllers; includes operation of individual controls and how they are integrated into control systems.

7136 Psychrometrics 3

Covers methods of estimating heat loss and heat gain in commercial and industrial work, plus use of psychrometric chart in calculating air qualities and quantities, with emphasis on selection of equipment, coil sizing, blower sizing and duct sizing; includes study of ventilation systems.

7137 Heat Loss and Gain Calculations 3

Covers methods used in calculating heat loss and gain in sizing units for residential application, including methods used to reduce energy consumption in residences.

7143 Blueprint Reading 3

Covers reading blueprints common to the trade, including floor plans, elevations, sections, details, plot plans and mechanical plans, including making tracings of blueprints and developing layouts of air conditioning systems; also covers use of symbols, notations and schedules on drawings, emphasizing proper lettering techniques, neatness and clarity in drafting. Specialized course for heating and air conditioning students.

7144 Commercial Refrigeration 3

Covers light commercial air conditioning and refrigeration systems, including medium and low temperature applications; also covers refrigeration accessories, metering devices, mechanical and electrical controls. Also includes an introduction to electrical and hot gas defrost systems.

7145 Heat Pump Service 3

Covers heat pumps used in residential applications including various types of systems, system control, balance points, C.O.P. ratings and pictorial and schematic diagrams.

7146 Advanced Cooling Service 3

Covers methods of trouble-shooting electrical and mechanical components used in central air conditioning systems.

7147 Uniform Mechanical Codes 2

This course is a study of state and local codes and ordinances covering the erection, installation, alteration, repair, relocation, replacement, addition to, use of, or maintenance of any heating, ventilating, cooling or refrigeration systems, or their component parts.

7148 Commercial Refrigeration — Practicum 1

This course is supplemental to Commercial Refrigeration (7144).

7149 Advanced Commercial Refrigeration — Practicum 1

This course is supplemental to Advanced Commercial Refrigeration (7153).

7151 Energy Management 2-3

Covers energy consumption (electricity, steam, gas, oil, coal) in buildings and methods that decrease cost of operation, including proper construction and insulation, proper zoning and control, programmed night and off-times setback, control of exhaust fans and make-up air units, proper control of heating and air conditioning systems, heat reclamation units of various types and energy-conserving exhaust hoods; also covers overall building energy control layouts and retro-fitting of existing heating and air conditioning systems.

7152 Air Balancing 3

This is a study and exercise in measuring air flow in heating, air conditioning, ventilating and exhaust systems. Students will learn to use the instruments utilized in this work. Students will practice adjusting and setting fan speeds, dampers, and other air regulating devices. The effect of duct sizing on fan brake horsepower, air velocities, and noise control will be studied. Air balance reports will be filled out.

7153 Advanced Commercial Refrigeration 3

Continues Commercial Refrigeration (7144) including work with heavy commercial equipment, with emphasis on metering devices, accessories and advanced control arrangements; stresses trouble diagnosis and safety precautions in dealing with refrigerants and heavy equipment.

7154 Duct Fabrication and Installation 3

Covers duct work layout, fittings and fabrication of duct and fittings from students' layouts, including proper use of hand tools of sheet metal trade, and shop equipment used for fabrication of ductwork and fittings.

7155 Specifications and Estimating 3

Covers job and equipment specifications and engineering data, with students using blueprints and specifications to "take-off" a job to arrive at costs of materials, labor, and equipment. Business principles such as overhead, job related costs, labor cost plus fringes, warranty coverages, taxes, permits, subcontracts, and mark-ups and margins will be studied. Estimating of service contracts and maintenance contracts will be covered. AIA documents will be studied.

7157 Alternative Energy Fundamentals 3

Covers magnitude of energy available from sun, various methods of collecting, and how to use and store energy for heating and cooling work; covers space heating and cooling, domestic and commercial hot water heating, and swimming pool heating. Air systems and water systems will be designed. Components will be selected, including collector cells, pump sizing, pipe and duct sizing, and design of distribution systems will be studied. Controls will be applied to the systems, with study of operational costs and savings.

7158 Absorption Air Condition Systems 3

Covers absorption cycle as used in cooling work, including ammonia-water and lithium-bromide cycles, types of units, arrangements, parts, function of various parts and applications of units into air conditioning systems, plus diagnosis of service problems.

7160 Duct Fabrication and Installation—Practicum 1

This practicum provides opportunity for additional skill development in layout and ductwork measurement, use of hand tools and sheet metal shop equipment, and in work experience with sheet metal and fiberglass duct board.

7162 Specialized Environmental Systems I

3

Covers special systems encountered in the field including heat pumps of all types, solar systems, electro-hydronic systems, and heat conservation and heat recovery systems. Temperature and humidity control systems will be studied.

7163 Air Distribution System Design

3

Covers methods used to size duct work for residential application, making working drawings of duct systems; also covers various types of duct systems used in residential applications.

7164 Specialized Environmental Systems II

3

This is a continuation of Specialized Environmental Systems I (7162), applying to pneumatic and other control systems.

7165 Advanced Electrical Controls

3

Covers control systems beyond ordinary residential and single-zone commercial jobs, including electronics and solid-state controls, zoning control, modulating controls used in larger systems, refrigerant flow, low-ambient controls, heat recovery, and economizer control arrangements.

7166 Specialized Environmental Systems III

3

This is a continuation of Specialized Environmental Systems II (7164).

7167 Air Distribution System Design—Practicum

1

This practicum offers additional opportunity for further skill development in the designing, sizing, and balancing of air distribution systems and in selecting the proper equipment to meet design needs.

7174 Service Organization and Management

3

Covers operation of service department, including taking of service calls and dispatching of servicemen, personnel recruitment and training, truck maintenance, stocking and routing of trucks, including proper handling of service tickets, pricing procedures, and collection practices; also covers warranty parts and procedures, service department overhead items, customer relations, advertising costs and service contracts.

7175 Equipment Sales

3

Covers sales techniques and procedures, the profession of sales-engineering, the role of manufacturers' representatives and marketing. Students will write quotations and proposals, formulate and write service contracts and study compensation plans for salesmen.

7176 Applied Design

4

Students integrate and use knowledge gained to complete air conditioning systems; students also analyze a given job, calculate heat losses and gains, select equipment, layout distribution systems, make working drawings, and calculate operating costs and maintenance

costs. Proper design and sizing of refrigerant piping, cooling tower piping and chilled water-hot water piping will be studied.

INDUSTRIAL MAINTENANCE**7331 Industrial Machine Electrical Circuits**

3

Studies fundamental single phase and 3-phase alternating current, including parallel circuits, resistance, inductance, switching, fusing, current requirements, transformer applications and motor control, as applied to typical machinery diagrams through discussion of design, wiring techniques and fabrication of wiring on machines.

7339 Machine Diagnosis and Repair (Electrical)

3

Studies trouble-shooting electrical control circuits, with emphasis on quickly locating section of circuit containing component trouble and determining which component is defective; includes relays, heaters, motor control switches and timers.

7340 Machine Diagnosis and Repair (Mechanical)

3

Covers skills commonly used to produce new and reconditioned mechanical parts for machines under repair, with emphasis on safety precautions when working on instruments; includes calibration techniques and repair of electro-mechanical devices, specialized practice in computation for industrial machinery, gearing, lead-screws, ways, couplings, bearings, dovetails and clutches.

7341 Basic Hydraulic and Pneumatic Principles

3

The fundamentals of fluid power and the components are covered as to principle function, terminology, repair and use. Study of machine tool circuits is used to make application.

7342 Hydraulic and Pneumatic Systems and Repair

3

Prerequisite: 7341

Presents understanding of hydraulic and pneumatic systems design, stressing proper use of tools to repair and trouble-shoot hydraulic and pneumatic systems; includes hydraulic and pneumatic valves, oils, gauges, fittings, hoses and other components.

7343 Preventive Maintenance

3

Stresses need for preventive maintenance for industrial equipment, including lubrication, maintenance and inspection records; what effects temperature, moisture and corrosion have on stored parts, and what effect speeds, feeds, machine loads and gearing have on preventive maintenance.

7344 Power Plant Mechanics I

3

Reviews power plant mechanics for those qualified for advanced study in this field.

7345 Power Plant Mechanics II

Continues Power Plant Mechanics I (7344).

7346 Industrial Instrumentation I

This course is designed to provide instruction on the purpose, function, and application of industrial instrumentation systems. Included will be systems such as temperature measurement, pressure measurement, flow meters, controllers, transmitters and regulators.

7347 Industrial Instrumentation II

3

This course is designed to provide instruction on set-up, calibration, and trouble-shooting of industrial instrumentation systems covered in Industrial Instrumentation I (7346).

7348 Millwright I

4

Introduces the student to proper use of hand and power tools and measuring instruments in carpentry, blacksmithing, rigging and equipment, machinist and general shop. The student will be exposed to structural steel and fabricating terms.

7349 Millwright Shop I

3

Allows opportunity to develop proficiency in the application of various trade tools and measuring instruments. The student will be given work assignments in general shop, machinist carpentry, blacksmithing and rigging, and equipment installation to perform operations with the tools described in Millwright I (7348).

7350 Millwright II

4

Introduces the student to machinery and related equipment, such as drive components, bearings, pumps, packing and seals, turbines, air compressors, boilers, mechanical fasteners and proper selection and use of lubricants.

7351 Millwright Shop II

3

Applies the mechanical principles of disassembly and assembly of mechanical equipment such as drive components, bearings, pumps, packing and seals, air compressors, turbines and other associated auxiliary equipment with an emphasis on interpretation of maintenance manuals.

7352 Trouble-Shooting Skills

3

This course is designed to introduce fundamentals of trouble-shooting and work procedures. Procedures and skills needed to effectively conduct planned, breakdown, and unscheduled maintenance are explained in detail. Stress is placed on the use of logic in trouble-shooting as opposed to the trial-and-error method.

7353 Cleaning Maintenance

3

An introduction to the selection and use of cleaning materials and equipment, sanitation procedures, and safety practices required in the proper maintenance of buildings.

7510 Basic Drafting

3

Drafting equipment, technique of lettering, sketching, basic dimensioning, scale reading and geometric construction.

3 7511 Intermediate Drafting

3

This course is a continuation of the introductory basic drafting course. The student will study the technique of isometric, oblique and perspective projections, auxiliary views, sections and precision dimensioning and tolerance.

7520 Descriptive Geometry

3

Studies graphic solution of engineering problems, such as true length, piercing points of a plane, line intersections, revolutions and developments.

7521 Industrial Processes and Systems

3

Studies manufacturing processes and equipment selection and use of modern machine tools, including basic methods of fabrication used in modern manufacturing, plus welding, electroforming, metallic coating, anodizing, plating and machine tool numerical control and hydraulic systems as used in industrial processes.

7522 Production Drawings

3

Studies working drawings, detail and assembly drawings, use of handbook data, developments and intersections, with emphasis on thread fasteners, springs and weldments.

7528 Introductory Drafting for Heating and Air Conditioning

3

Prerequisite: 7143

Studies lettering, linework, isometric drawings, duct layout, electrical control layout and pipe layout.

7529 Introductory Drafting for Machine Tool

3

Studies lettering, isometric drawing, orthographic projection, sectioning, dimensioning and numerical control.

7530 Product Drafting I

3

Studies detail and assembly drawings, stock lists, springs, weldments and catalog items.

7531 Mechanisms and Machines

3

Prerequisites: 7511, 8209, 8301

Studies procedures and consideration in design of simple machine elements, including shafts, bearings, keys, pins, springs, clutches, brakes and pressure cylinders simulating current industrial methods; also includes displacement velocity and acceleration, analysis of linkages, cams and gears, geometry of involute gears, properties of a standard spur, helical, bevel and planetary gear.

7532 Tool Drafting

3

Prerequisite: 7522

Studies detailing of metal cutting tools, jigs, fixtures, gauges and tools used in manufacturing processing.

7533 Die Drafting

3

Studies planning and detailing of blank, piercing and forming dies, and plastic mold and die casting.

7540 Product Design Drafting

3

A course dealing in the design and application of consumer-oriented products considering the facets of function, sales appeal, and cost.

7541 Advanced Tool and Gauge Design Drafting	3	to the tool itself and the material for which it is designed to remove.
Design jigs, fixtures, cutting tools, tool holders and gauges from an existing product, standards and former designs.		
7543 Technical Illustration	3	
Three-dimensional drawing methods and rendering techniques with emphasis placed on the proper use of templates, and isometric drawing. Also includes measuring in isometric, line and plane positions in isometric and reference lines and points.		
7545 Product Drafting II	3	
Studies development and manufacturing of consumable and depreciable items along with their design, with special attention to use of standard catalog sizes and equipment.		
7547 Electronic Drafting	3	
The techniques used in diagramming electronics circuits and systems. Emphasis is placed on drawing diagrams as well as on skills used in reading and interpreting diagrams and electrical blueprints.		
7550 Gear and Cam Design Drafting	3	
Prerequisite: 7522		
Considers basic cam design converting rotary motion into linear with application of physical principles inherent in cam design, with gears studied in detail as to type and function; includes transmission of power, speed and mechanical advantage.		
7551 Statics	3	
Theory and application of engineering mechanics, fundamental quantities, units, force and position vectors, equilibrium of a particle, equivalent force systems, equilibrium of a rigid body, structural analysis, internal forces, center of gravity and centroids, moment of inertia for an area, radius of gyration, and section modulus.		
7552 Strength of Materials	3	
Various types of stresses, strain, modulus of elasticity, shear and bending diagrams, bending and deflection and safe loading capacities of structural members under working loads.		
7553 Advanced Die Design Drafting	3	
Presents designing and drafting of piercing and forming dies, including design procedure for blanking, progressive, compound, piece-part-form-bend and draw dies using standards and handbook data.		
7555 Mold Design Drafting	3	
Construction of the molds commonly used in the production with respect to the shape of the product for mass production. Given types of molded product shapes will be produced to current industrial practice. Given industrial casting products, mold designs will be developed in accordance with accepted practice.		
7556 Cutting Tool Design Drafting	3	
A course dealing with the design of single and multiple point cutting tools. Also includes metallurgy as it relates		
7557 Jig and Fixture Design	3	Considers study and design of Jigs and fixtures covering basic types used in industry, with intensive procedures of detailing out of assembly; emphasizing theory of gauging; basic terminology ring, snap, flustpin, thread, indicator and location gates; and dimensioning and tolerancing of gauges.
7558 Sheet Metal Drafting Project	3	Studies basic elements of sheet metal work as applied to design and layout of sheet metal forms, with students proceeding rapidly into practical layout problems in duct work designing industry.
7559 Route Surveying	4	Theory covering route surveying including horizontal and vertical curve, data, and design, highway layout, railroad layout, superelevation and earthwork calculations.
7560 Machine Design Drafting	3	Considers design of machines and mechanisms of tools of production, with use of hydraulics and pneumatics in actuating and controlling automated machines.
7561 Advanced Surveying Field Problems	2	A field exercise course devoted to route surveying, laying out curves, setting elevations and horizontal and vertical controls and earthwork data.
7563 Advanced Jig and Fixture Design Drafting	3	Studies include the design of various types of jigs and fixtures. Emphasis is placed on theory of locating and clamping parts for machining.
7564 Metallurgy—Practicum	1	Includes understanding basic principles of metallurgy; heat treat color spectrum, grain growth, recrystallization, and other characteristics; preparation of testing material, carbon spark test, ductility and strength; understanding the isothermal transformation diagram of carbon steel; and usage of S.A.E. and A.I.S.I. code standards.
7565 Metallurgy Fundamentals	2	The fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques are studied. Properties of metals and tests to determine their uses; chemical and physical metallurgy; theory of alloys; heat treatment for steels, special steels and cast iron; powder metallurgy; and classification of metals are also studied.
7571 Industrial Planning and Estimating	3	Applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development and manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems;

also includes study of time and motion in the practical application area using industrial practice as basis for establishment of rates.

7572 Industrial Design Product Drafting 6

Design and application of consumer products considering the facts of function, sales, appeal and cost.

7575 Numerical Control and Data Processing 3

Introduces the concept of automatic process control. Fundamentals of feedback elements, transmission, control action, controlling elements, transmission, control action, controlling elements and final control elements as used in pneumatic, hydraulic and electrical systems. Special emphasis is placed on the relationship between digital devices and the automatic process control system. Includes a brief introduction to FORTRAN programming. Applied mathematics is also included.

7576 Manufacturing Planning and Estimating 4

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development and manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems. Also includes a study of time and motion in practical application areas, using industrial practice as a basis for the establishment of rates. Applied mathematics and communications skills are stressed.

7577 Design Problems 4

Opportunity to integrate the knowledge previously acquired to design complete machines or sub-assemblies of machines. Analyze problems, gather data sketch ideas on paper, do necessary mathematical calculations, make working drawings, and finally checks work. Encourages use of judgement and initiative to the maximum.

7578 Piping Fundamentals 3

This course introduces the student to both residential and industrial plumbing requirements. It is necessary for people involved in construction to transmit technical information correctly. Before a draftsman can draw any plumbing systems it is mandatory for him to have the technical language and plumbing knowledge to perform his work well.

SURFACE MINING OPERATIONS

7610 Introduction to Mining 5

Introduces mining fundamentals with emphasis on safety and management, geological factors affecting mineral formation, mineral resources of the U.S. and different methods of mining. It will include a brief introduction to subjects covered in detail throughout entire course and tours of surface mines in local area.

7611 General Physical Geology 5

Studies fundamentals of geology and geological history

of North American continent with emphasis on Mississippian and Pennsylvanian periods; includes study of sediments and sedimentary rocks, especially those allied with coal beds, and features field trips in the local area.

7612 Surface Mining Machinery 4

Studies basic concepts of operation of surface mining machinery, familiarizing students with all types; includes group reports and visits to area mines, with emphasis on recognizing structural defects and preventing hazardous operation; also maintenance, life expectancy, operator skills and required training.

7620 Mining Regulations 5

Studies Surface Mine Law, including Part 77 of Federal Regulations, and coal mining laws of Indiana, Illinois and Kentucky.

7621 Mine Maps and Surveying 2

Presents working concept of mine maps and basic knowledge and technique of surveying with applications to mine uses, including taping, profile leveling, cross sections earthwork computations and transit stadia and transit-tapes surveys.

7622 Mine Maps and Surveying Lab 2

Continuation of Mine Maps and Surveying (7621).

7623 Elements of Reclamation 4

Includes discussions of theory of land reclamation with specific application to surface mining industry; basics of reforestation, and types of grasses and legumes in different geographical areas; existing federal and state regulations with theoretical possibilities of future regulations; stresses importance of production and reclamation as a working unit.

7625 Surface Mining Field Study I 6

Complies with policy definitions of Cooperative Education as defined in "Curriculum" section of the College catalog.

7626 Surface Mining Field Study II 6

Continuation of Surface Mining Field Study I (7625).

7630 Surface Mine Hydraulics 4

Covers fundamentals of fluid power and components including function, terminology and use of mining equipment.

7631 Elements of Spoil Management 4

Studies deposition of overburden, slope control, basic principles of spoil control, with emphasis on principles of planning, use and effective management of varied spoil materials; includes study of principles of vegetative survival through understanding of physical and chemical properties; investigates practical conservation practices.

7632 Equipment Operations Laboratory I 4

Studies practices and devices involved in extraction of overburden and transportation of coal, including equipment used in drainage, use of electric, hydraulic and compressed air power and coal preparation equipment and machinery.

7633 Principles of Welding	4	and other appropriate transportation.	
Presents practical use of oxy-acetylene and electric arc welding equipment, with students practicing cutting, bronze welding, fusion welding and hard-facing with oxy-acetylene flame.			
7640 Blasting and Explosives	5	7654 Mine Operational Planning	4
Includes instruction in specific details of care and use of explosives in accordance with mandatory standards.		Studies development of effective planning as related to day-to-day and long range, specific mining operations.	
7641 Techniques of Operation Safety and Accident Prevention	4	7660 First Aid and Safety Management	4
Presents basic instruction for development of skills in speaking, listening and writing, including use and understanding of the Bureau of Mines dictionary of Mines, safety films, wage agreements, forms and reports required by government agencies with emphasis on safety.		The student is presented training in first aid, dust and noise evaluation, gas detection, safe and unsafe practices with a view to reducing accidents, emergency aid for injured persons, mine rescue operations, actions taken by mine personnel, and instructor training with certification by the Mine Safety and Health Administration as the end result.	
7642 Electrical Circuits and Systems	4	7662 Coal Mine Supervision	5
Introduces electrical principles of machine operation, including basic electricity, conductors and conductor sizes, magnetic circuits, coil polarities, and AC and DC motors.		Provides basic introduction to management and related obligations, including principles of motivation, employee relations and management by objectives.	
7643 Economics of Mining and Cost Calculations	4	7663 Water Drainage and Water Pollution Laws	5
Covers fundamental economics and basic principles in business systems in everyday terminology, with emphasis on practical economics as opposed to theoretical; includes cost and pricing, competition, money systems, taxes and productivity.		Covers control of water in mining operations, including slurry ponds, pit drainage and acid seepage and study of federal EPA regulations.	
7644 Equipment Operations Laboratory II	2		
This class will be a continuation of Equipment Operations Laboratory I (7632) and will give the students practical experience in equipment handling.			
7645 Surface Mining Field Study III	6	MACHINE TOOL	
Provides extended practice and skill development opportunities directly related to one or more specific courses.			
7646 Surface Mining Field Study IV	6	7710 Basic Machine Tool Introduction	3
A continuation of Surface Mining Field Study III (7645).		Studies theory of machine tool processes, care and use of hand tools, measuring devices, etc. with emphasis on basic drawing and understanding prints and lab safety features.	
7650 Coal Preparation Plants	2	7711 Basic Machining Fundamentals	3
Covers purposes of coal preparation plants, including raw coal, plant processes, disposal of refuse and slurry, coal storage and loading, and mechanics.		Uses simple bench work, sawing, filing, layout, drilling and reaming, toward project completion, including applied mathematics and communications skills.	
7651 Coal Sampling and Analysis	3	7712 Machining Fundamentals	3
Provides basic instructions, including limited laboratory training in approved methods of analysis of coal, particularly as related to Bureau of Mines safety requirements.		Introduces lathe, milling machines, shapers and drill press, and their use as applied to related project assignments.	
7652 Labor Relations	3	7713 Machining Fundamentals— Practicum	1
Studies in depth development of labor and management approach to operation of mining industry, with emphasis on proper and ethical procedures involved with personnel administration.		Provides extended practice and skill development in the use and operation of lathes, milling machines, and drill presses.	
7653 Transmission Systems, etc.	4	7714 Basic Drilling Operations	5
Studies applications of gears and gear drives, and mechanical advantage as related to transportation of coal including by truck, rail, slurry, conveyor belt,		Introduces the student to basic drilling set-ups and operations, including the proper use of workholding devices, speeds, feeds, thread tops, and tapping techniques.	
7720 Machine Tool Processing	3	7715 Basic Milling Operations	5
		Introduces the student to milling machinery operations focusing on proper speeds and feeds for both vertical and horizontal machines. Blueprint reading, precision measurement, safety, and the use of workholding fixtures and bandsaws is introduced.	
		Studies fundamental machine shop requirements such	

as threads and threading, sine bar applications, dividing or indexing head; introduces lab assignments and sketches.

7721 Machine Tool Set-Up and Operation

3

Studies completed, hardened and ground V-block internal and external threads and use of the dividing head; includes applied mathematics.

7722 Machine Tool Processes—Practicum

1

Provides extended practice and skill development in the fundamentals of machine shop requirements as they relate to threading, sine bar applications, and dividing heads.

7723 Machine Tool Set-Up—Practicum

1

Provides extended practice and skill development in operations designed to complete hardened and ground V-blocks, internal and external threads and use of the dividing head.

7724 Basic Grinding Operations

5

This course deals with basic surface grinding applications and skills. Projects are machined to precision tolerances and surface finishes.

7730 Advanced Machine Tool Processing

3

Introduction to basic grinding procedures and operations.

7731 Basic Print Reading

3

Interprets machine shop symbols, stock lists, shop blueprints to dimensions, shapes, fabrication and assembly, with basic mathematics applied to solving print and performance problems.

7732 Advanced Machine Tool Processing—Practicum

1

Provides extended study of non-traditional machining such as H.E.R.F., Laser, E.D.M. and E.C.M.

7733 Advanced Machine Tool Set-Up and Operation

3

Continues tool processing, surface and cylindrical grinding, and applied mathematics.

7734 Advanced Print Reading

3

Applies mathematics in solving shop problems related to die design and fabrication, special machinery, die casting, etc., including assembly, drawings interpretation and ability to make sketches without shop instruments; simple motion device or progressive die will be designed.

7735 Advanced Machine Tool Set-Up—Practicum

1

Provides extended practice and skill development in surface cylindrical grinding and its related mathematics.

7736 Advanced Mill Operations

5

In this course the student learns the milling operations of a plunge milling, step milling, and angle milling. He also machines a project which must function upon assembly.

Dimensional tolerances are established and maintained to establish industrial specifications.

7738 Production Machining Set-Up and Theory

2

This course deals with instructing the student with skills pertaining to obtaining maximum efficiency in production machine set-up and operation. The core of the class is, discussion and demonstration of standard and non-standard cutting tools including sizes, materials and finishes. Also included is calculating cutting speeds and feeds in relation to production machining, and utilizing component parts of work-holding devices to maximum efficiency.

7739 Basic Lathe Operations

5

In this course the student is introduced to basic engine lathe operations and systems. Proper speeds and feeds are demonstrated and the student is to complete a series of "hands-on" elementary projects. Dimensional tolerances and finishes are developed in this course.

7740 Specialized Machining Theory

3

Introduces jig boring, grinding, and procedures plus rotary table, tracing practices, advanced machine tool processes in varied areas, including special projects using specialized machine tools.

7741 Basic Heat Treat and Metallurgy

3

Studies fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques; use of gas and electric furnaces and their controls; heat treatment principles as applied to ferrous and non-ferrous materials; properties of metals and tests to determine uses; chemical and physical metallurgy, theory of alloys, treatment for steels, special steels and cast iron, powder metallurgy, classification of metals, and applied mathematics and communications skills.

7742 Specialized Machine Tool Application I

3

Applies jig boring and grinding studies to advance project completion; includes math skills.

7743 Specialized Machine Tool Application II

3

Applies differential indexing gear cutting and cam milling; applies tracer design and application to project completion; includes required mathematics.

7744 Machinery Handbook I

3

The course is designed to instruct the student on the use and intentions of the Machinery Handbook.

7745 Machinery Handbook II

3

A continuation of the use of the Machinery Handbook as applied to the Machine Tool program.

7747 Advanced Lathe Operations

5

In this course the student machines a thread on the lathe and works with tapers machined by various methods. Also included is work on a turret lathe, both as an operator and basic set-up.

7748 Specialized Machine Tool Applications II—Practicum

1

This course is supplemental to Specialized Machine Tool Application II (7743).

7750 Tool Fabrication

3

Studies accepted tool design, assembly and standards, with emphasis on basic blanking and piercing dies and their operations and components.

7751 Tool Fabrication II

3

Consists of students developing acquired knowledge of progressive dies, transfer of motion and force, with fabrication and designing skills demonstrated toward assigned project completion.

7752 Mechanism Design I

3

In this course the student studies and researches various mechanical movements and mechanisms. The student will consider the feasibility and degree of complication of a particular movement and incorporate it into a workable mechanism.

7753 Mechanism Design II

3

In this course the student works from a sketch of an approved mechanism and, using accepted drafting standards and practices, completes a working drawing.

7754 Tool Fabrication I—Practicum

1

This course is supplemental to Tool Fabrication (7750).

7755 Tool Fabrication II—Practicum

1

This course is supplemental to Tool Fabrication II (7751).

7758 Numerical Control and Automatic Processing I

3

Introduces concept of automatic process control and fundamentals of feedback elements, transmission, control action, controlling elements as used in pneumatic, hydraulic and electrical systems; emphasis on relationship between digital devices and automatic process control system, special tooling techniques required, programming of tape controlled machines and applied mathematics required.

7759 Numerical Control and Automatic Processing II

3

Continuation of Numerical Control and Automatic Processing I (7758).

7760 Numerical Control and Automatic Processing III

3

The course introduces computer aided numerical control programming, introducing 16 vocabulary usages and their results in numerical control computer programming. The course emphasizes preparation of a manuscript for computer numerical control program preparation, teaching cutter location computer file data and how it is used. Post processors are utilized and input-output data is covered.

7761 Plastics Molding and Die Casting Fundamentals

3

Studies basic materials and processes used in plastics and die casting technology, including types of mold and die tools, plastic and die casting composition, basic injection mold and die cast design and machines and methods used to produce various products with emphasis on injection molding and die casting methods.

7762 Precision Measurement

3

Demonstrates process for linear and angular measurements, methods and techniques of applying precision measurements to the varied machine tool applications, including production and quality control.

7763 Grinding Technology I

3

Allows opportunity for familiarity with and proficiency in industrial application of grinding, including such operations as contour and radius grinding, ability to set and dress designed internal and external radius to within .005" with 90 percent accuracy; includes identification of abrasives and structure of grinding wheels, and proper care and use.

7764 Layout and Inspection

3

Consists of students demonstrating skill of various layout materials and instruments, with interchange ability considered in relation to inspection procedures; includes applied mathematics.

7765 Grinding Technology II

3

Continuation of Grinding Technology I (7763).

7766 Screw Machine Operator—Set-Up I

3

Basic training in preparing a student in the field of multiple spindle screw machine operation.

7767 Screw Machine Operator—Set-Up II

3

Intermediate training in preparing a student in the field of multiple spindle screw machine operation.

7768 Screw Machine Operator—Set-Up III

3

Advanced training in preparing a student in the field of multiple spindle screw machine operation.

7769 Numerical Control and Automatic Processing IV

3

A continuation of Numerical Control and Automatic Processing III (7760).

POLLUTION TREATMENT**7913 Introduction to Environmental Control**

4

Overviews the entire pollution problem relating each type of pollution, including water, air, population, solid waste, radiation and noise, and their relationships; also overviews the global environmental dilemma confronting mankind and man's impact on the environment.

7915 Applied Chemistry I

3

Consists of intensified laboratory training program in

proper performance of various chemical analyses for awareness of tests and procedures necessary to comply with state and federal wastewater effluent standards with tests including DO, BOD, COD, pH, suspended solids and chlorine residual, plus sampling technique and flow measurement.

7916 Environmental Seminar 1

Presents papers and group discussions developing environmental awareness through intensive monitoring of all communications media.

7926 Applied Chemistry II 3

Consists of intense laboratory training program in proper performance of various chemical analyses necessary to comply with state and federal water quality standards, including theory and laboratory techniques for alkalinity, hardness, turbidity, acidity, nitrates, ammonia, phosphates, grease and oil, cyanide and phenols tests.

7934 Basic Hydraulics 4

Prerequisite: 8204

Familiarizes students with elementary engineering aspects of water supply and distribution and wastewater collection, removal and disposal, including introduction to study of closed conduit and open channel flow, stream flow, runoff and pump characteristics.

7942 Applied Microbiology 3

Consists of intense laboratory training program in areas of applied water and wastewater microbiology and microbiology of milk and food, including total and fecal coliform, total plate count, milk and food inspection.

7943 Water Supply and Treatment 4

Prerequisite: 7926

Studies basic principles of water purification including coagulation, sedimentation, chlorination, treatment chemicals, taste and odor control, bacteriological control, mineral control design criteria, maintenance programs and operational programs; studies new processes and recent developments and features field trips.

7945 Equipment and Maintenance I 3

Presents theory of basic electricity and electronics, and use and maintenance of laboratory equipment, instrumentation, electrical systems and motors, with emphasis on methods of troubleshooting and attitudes of safety.

7946 Applied Research I 2

Consists of students researching an area of interest in air or water pollution field, presenting a paper about the research.

7951 Reporting and Purchasing 2

Studies recordkeeping, reporting and purchasing practices necessary for efficient operation of an air or water pollution control facility.

7954 Plant Operations I—Municipal 4

Prerequisites: 7926, 7934

Studies elementary engineering aspects of design, op-

eration and maintenance of wastewater treatment plant, including design parameters for all processes, materials used and their purposes, type and operation of equipment, maintenance of plant and equipment, and typical solutions to specific operational problems; features field trips and co-op training.

7955 Management and Supervision Procedures 3

Studies effective skills necessary to understand human motivation and behavior, with emphasis on improving individual attitudes, productivity and morale in working situations; includes hiring, orienting and dismissing employees, handling emergencies, maintaining operational control, specific aspects of public relations and image development.

7956 Applied Research II 3

Consists of students researching an area of interest in air or water pollution, and presenting a paper regarding the research.

7957 Community Sanitation 3

Introduces protection of health and promotion of human comfort and well-being through control of man's environment; including communicable diseases, solid wastes disposal, milk and food sanitation, disinfectants and insecticides, insect vector and rodent control, institutional sanitation and occupational health; features field trips.

7958 Equipment and Maintenance II 3

Consists of lectures and "hands-on" type experience with use of maintenance of mechanical equipment; including pumps, valves, blowers, lift stations, feed systems, plant grounds, building and tanks, with emphasis on proper attitudes of maintenance and maintenance programs.

7959 Water Distribution 3

Familiarizes students with elementary engineering aspects of water supply and distribution including pumping, storage, metering, pipe installation and maintenance, chlorine handling and safety, and public relations.

7960 Air Pollution Control I 4

Prerequisites: 7926, 7942

Studies fundamentals of air pollution control including history of air pollution, effects, air pollutants and their sources, meteorology and air pollution, basic concepts in thermodynamics, air quality criteria, particulates, sulfur oxides, nitrogen oxides, hydrocarbons, photochemical oxidants, process types, industries and agencies, applicability of federal, state and local regulations, inspection and enforcement; features field trips.

7961 Plant Operations II—Municipal 3

Studies special processes of advanced wastewater treatment with emphasis on ammonia and phosphorus removal, carbon absorption, filtration, disinfection and coagulation.

7963 Plant Operations III—Industrial 3

Studies special problems of industrial wastewater treat-

ment, with emphasis on major classifications of liquid industrial wastes and their treatment; including neutralization, equalization, proportioning, removal of troublesome solids and cyanide, and chromium treatment; features field trips.

7964 Plant Mathematics

4

Prerequisite: 8204

Emphasizes problems involving wastewater processing and process control, laboratory and efficiency calculations, with special emphasis on proficiency in performance of basic mathematical skills and development of adeptness for treatment plant calculations.

7965 Wastewater Treatment Operator Training Course

4

A study of basic principles of water purification including: aeration sedimentation, rapid sand filtration, chlorination, treatment chemicals, taste and odor control, bacteriological control, mineral control, design criteria, maintenance programs and operational problems. New processes and recent developments are studied. Criteria, rules, regulations, forms and records associated with the field are considered. Also emphasizes the elementary engineering aspects of the design, operation and maintenance of wastewater treatment plants and includes specific topics on: design parameters for all processes; materials used and their purposes; type and operation of equipment; maintenance of plant and equipment, and typical solutions to specific operational problems. Electrical wiring of motors and control circuits and their associated troubleshooting techniques are also studied.

7966 Hazardous Materials

2

Includes explosive, combustible, corrosive, toxic and radioactive substances in course designed to review basic chemistry of new and dangerous products of modern civilization.

7967 Occupational Orientation

2

Develops environmental awareness through intensive monitoring of all communications media, with guest speakers and films introducing students to opportunities in environmental fields of wastewater, water, air, health, noise, etc., developing concern involvement, knowledge of environmental problems and career opportunities through group discussion.

7968 Maintenance of Collection Systems

4

Studies methods and reasons for operation and maintenance, inspection, testing, cleaning, repairs, etc. to the sewer collection system. Includes operation and maintenance of lift stations, safety, and administrative record controls.

7969 Secondary Treatment Process Controls

3

Consists of detailed study of operational controls and

tests necessary for the efficient operation of activated sludge, trickling filters, and other secondary wastewater processes.

7970 Air Pollution Control II

3

Studies theory and laboratory techniques for ambient air quality sampling and source sampling, including definition of air pollutants, sources and occurrences, sample collection, equipment used for collection, maintenance of laboratory equipment, calculation, and interpretation of results; features field trips.

7972 Environmental Administration

4

Studies structure of present decision-making, including federal, state, local governments and private sector, relative to the environment; introduces fundamentals of environmental law.

7973 NPDES Workshop

2

Consists of intensified laboratory training program in the proper performance of various chemical and biological analyses to develop the capability for compliance with state and federal water quality and effluent standards. Operators are expected to attain skills to competently conduct laboratory analyses for BOD, DO, chlorine residual, suspended solids, pH, fecal coliform and flow measurement, and to maintain necessary equipment for these analyses.

7974 Phosphorus Removal Workshop

2

Designed to equip students with an awareness of the importance of phosphorus removal and with skills to calculate the amount of chemicals to be used, monitor point(s) of application of chemicals, effectively evaluate operating system for phosphorus removal, and conduct tests indicating efficiency of phosphorus removal. Also includes background information on basic design considerations for such removal systems, different chemicals available for phosphorus removal, maintenance of equipment involved, and record keeping. Designed for operators and chemists of wastewater treatment plants requiring phosphorus removal, now or in the future.

7975 Basic Laboratory Skills

2

Emphasizes development of basic laboratory skills including identification, care and use of laboratory equipment and glassware; also includes laboratory safety, sampling techniques, solutions and dilutions, ordering and maintaining an inventory of supplies and equipment.

7976 Metal Analysis Workshop

2

An intense program in proper sampling and preservation techniques of samples for metal analyses, preparation of standard solutions, preparation of samples for analysis, and use of atomic absorption spectrophotometer.

WELDING

8001 Gas Welding I

3

Provides basic knowledge in oxy-acetylene welding, with

devotion to detailed study of techniques of making welds in all positions, with instruction in gas welding, brazing and flame cutting; provides additional background information essential to qualified gas welders through lecture and discussions.

8002 Gas Fusion and Brazing Shop 3

Concerns actual welding practice of the oxy-acetylene welding process in all positions; includes brazing and cutting exercises.

8003 Gas Welding II 3

A continuation of Gas Welding I (8001).

8004 Gas Welding Lab II 3

A continuation of Gas Fusion and Brazing Shop (8002).

8005 Gas Welding I—Practicum 1

Designed to provide additional time for skill development in the proper techniques of welding. The lab may also be used for advanced skill development.

8006 Basic Metallurgy 3

Studies properties and uses of ferrous and non-ferrous metals and alloys, production of iron and steel, composition and properties of plain carbon steel and alloying elements, selection of tool, case hardening, destructive and nondestructive testing; includes fundamentals of heat treatment and reactions that occur in metals subjected to various heat-treatment methods and techniques.

8007 Basic Metallurgical Shop 2

Prerequisite: 8006

The student will receive "hands-on" experience using various equipment for destructive and nondestructive testing. In addition, heat treating principles and procedures as related to welding applications are covered.

8009 Gas Welding II — Practicum 1

This course is designed to advance student skills in oxy-acetylene welding.

8010 Arc Welding I 3

Covers welding in ferrous metals and alloys using shielded metal arc welding methods, including techniques in flat and horizontal positions, and single pass and multipass techniques; also safety hazards and safe practices in arc welding.

8011 Arc Welding Shop I 3

Includes extensive welding practices on mild steel using various electrodes, with students limited to actual practices on making welds in flat and horizontal positions. Requires prior knowledge of oxy-acetylene cutting procedures.

8012 Arc Welding I — Practicum 1

Designed to provide additional time for directed skill development in both basic and advanced welding techniques.

8013 Blueprint Interpretation I 3

Studies basic fundamentals of blueprint interpretation as applied to welding trade, including metal structures,

specifications and assembly drawings, interpretation of blueprints which show job applications and their relationships with specific attention given to special forms of dimensioning and section views.

8016 Arc Welding IV 3

This course introduces the technique of welding ferrous metals and alloys using electric arc welding methods. Students are exposed to single and multipass techniques and vertical and overhead welding positions.

8017 Arc Welding V 2

A continuation of Arc Welding IV (8016).

8018 Arc Welding Shop I—Practicum 1

This course is supplemental to Arc Welding Shop I (8011).

8019 Arc Welding II—Practicum 1

Designed to provide additional time for skill development of students in Arc Welding IV and V. Focus is on welding techniques in vertical and overhead positions.

8020 Arc Welding II 2

Covers welding of ferrous metals and alloys using shielded metal arc welding methods; includes techniques in vertical and overhead positions, and single pass and multipass techniques with emphasis on safety hazards and safe practices in arc welding.

8021 Arc Welding Shop II 3

Includes actual advanced welding practice, with students making welds in vertical and overhead positions with various types and sizes of electrodes; also single and multipass welds.

8022 Electrical Fundamentals 3

Studies relationship between voltage, current and resistance in electrical circuits with emphasis on use of high-current transistors in AC circuits; includes special emphasis on production of heat as result of current flow through resistance.

8023 Arc Welding VI 2

Improves basic arc welding skills with special emphasis on overhead position welding and special metals welding.

8024 Blueprint Interpretation II 3

Includes advanced fundamentals of blueprint interpretation dealing with welding symbols and significance in the welding trade, with emphasis on process symbols, finish symbols and methods of finish.

8025 Arc Welding Class III 2

Prerequisites: 8010, 8011

Emphasis will be on welding procedures for stainless steel, cast iron, hard surfacing and arc air cutting operations.

8026 Arc Welding Shop III 3

Prerequisites: 8010, 8020

The students will demonstrate their ability to weld stainless steel and cast iron welding on different joint de-

signs. Arc air cutting will be considered along with hard surfacing.

8029 MIG II

2

A course which provides extensive welding practice using the metal-inert-gas welding process. The student makes welds on various metal thicknesses and in all welding positions.

8030 MIG Class

1

Provides thorough knowledge of various welding processes, particularly metal inert gas welding, with emphasis on detailed study of techniques of making welds in all positions using GMAW applications; provides additional background information through lectures and discussion.

8031 TIG Class

1

Provides thorough knowledge of various welding processes, particularly gas tungsten arc welding, with emphasis on detailed study of techniques of making welds in all positions using the GTAW applications; provides additional background information through lectures and discussion.

8032 MIG Lab

2

Involves extensive welding practice using gas metal arc welding process, with students making welds on various metal thicknesses and types of metal in all welding positions.

8033 TIG Lab

2

Involves extensive welding practice using gas tungsten arc welding process, with students making welds on various metal thicknesses and types of metal in all welding positions.

8034 TIG II

2

The student will be involved in extensive welding practice using the GAS tungsten arc welding process; welds on various metal types and thicknesses and in all welding positions will also be required.

8038 Basic Mine Welding II

2

This course introduces the student to all four welding positions and to the use of low hydrogen electrodes and flux-cored metal inert gas welding wire similar to the type used in mining operations. Advanced weldments subject to guided bend testing will also be required of students.

8039 Arc Welding IV—Practicum

1

Provides extended practice and skill development in the more advanced positions of arc welding.

8040 Welding Equipment Maintenance (Oxy-acetylene and Arc)

3

Includes theory of operation of oxy-acetylene and arc equipment, construction of oxy-acetylene and arc equipment discussion, and maintenance and troubleshooting of welding equipment.

8041 Welding Equipment Maintenance Shop—Oxy-acetylene and Arc

1

Involves "hands-on" experience with actual maintenance and repair of oxy-acetylene and arc welding

equipment, with students working with hoses, cables and installation of replaceable working parts of oxy-acetylene and electric arc welding equipment.

8042 Basic Fabrication (Class)

1

Covers basic principles of layout and measurement used in fabrication of steel products, including tolerances, fits and allowances, with types of inspections related to fabricated steel products discussed.

8043 Basic Fabrication Shop

2

Involves construction of individual projects using metal products and other materials.

8044 Welding Equipment Maintenance (Inert Gas)

3

Covers thorough knowledge of various welding processes, particularly tungsten inert gas and metal inert gas welding, with emphasis on detailed study of techniques of making welds in all positions using TIG and MIG welding applications, plus lectures and discussions.

8045 Welding Equipment Maintenance Shop (Inert Gas)

1

Provides "hands-on" experience with maintenance and repair of TIG and MIG inert gas welding equipment.

8046 Basic Mine Welding (Class)

1

Studies welding techniques and materials used in mining industry, including welding with low hydrogen electrodes and flux-cored wire; prepares students for pre-employment testing as administered at mining operations and coal mine construction projects.

8047 Basic Mine Welding Laboratory

2

Involves lab exercise using low hydrogen electrodes and flux-cored metal inert gas welding wire such as in most mining operations, with initial practice in all 4 welding positions. Upon completion of first exercises, students make advanced weldments subject to guided bend testing.

8048 Occupational Safety and Health Act (OSHA) for Welding

4

Breaks down Occupational Safety and Health Act of 1970 to aid in understanding without having to read entire act; teaches about employer and employee rights and responsibilities, rules or standards that must be complied with, inspections by Compliance Safety and Health Officers, violations, citations, penalties, variances, appeals, record keeping, and state and federal safety and health programs, with each topic amplified in detail.

8049 Production and Resistance Welding (Class)

3

Studies in-depth use of both gas and arc welding in manufacturing and repetitive production operations, with emphasis on welding of pipe and resistance welding techniques.

8050 Production and Resistance Welding Shop

2

Emphasizes welding of pipe in fixed horizontal and vertical positions.

cal positions, and resistance spot and projection welding on various thicknesses and types of materials.

8051 Welding Certification I

Studies certification procedures necessary to qualify welders; includes qualifications agencies, associations and societies, equipment standards and standard qualification procedure.

8052 Welding Certification II

Prerequisites: 8011, 8021, 8032, 8033

Includes actual welding qualification practices in shielded metal arc, TIG and MIG welding, with students satisfactorily completing course qualifying in at least one of the above processes.

8053 Basic Pipe Welding I

Covers welding of pipe with the SMAW process, techniques in all position welding and use of various electronics, plus joint design and fitup.

8054 Basic Pipe Welding II

Covers pipe welding, including multipass welding in all positions.

8055 Special Welding Processes

Concerns actual welding practices of various welding processes and techniques using advanced welding method, machines and equipment.

8056 Plasma—Arc

Covers safety and preparation in setting up equipment for welding.

8057 Plasma—Arc Lab

Concerns preparation of students with basic skills and fundamental knowledge of plasma—arc welding in flat and horizontal positions.

8058 Industrial Materials

Studies internal stresses and deformation of elastic bodies resulting from external forces, using tables of properties of engineering material extensively; includes analysis of simple and combined stresses relative to properties of materials to meet functional requirements, laboratory work involving strength, hardness and durability of common industrial materials, and applied mathematics and communications skills.

8059 Welding Trouble-Shooting

Studies evaluation of weldments, welding procedures and tolerances, plus joint design and alignment.

8060 Welding Trouble-Shooting Inspection Shop

Includes "hands-on" experience with actual practice of visual destructive and nondestructive testing of weldments, with review of correct welding techniques.

8061 Shop Practices

Provides extended practices and skill development opportunities directly related to one or more specific welding processes.

8062 Advanced Shop Practices

1-3

Continues Shop Practices (8061) for extended practices and skills development opportunities directly related to one or more specific welding processes.

8063 Welding Practice for Auto Service I

3

Introduces basic welding with emphasis on safety and procedures as pertaining to automotive service area; includes special welding techniques required in auto service using materials common to the field.

8064 Welding Practice for Auto Body I

3

Introduces basic welding processes with emphasis on safety and procedures pertaining to automotive body repair area, including special welding techniques required in auto body repair area, using materials and common applications of this field.

8065 Welding Practice for Agricultural Equipment

3

Introduces basic welding with emphasis on safety and procedures as pertaining to agricultural equipment area, including special welding techniques required in agricultural equipment using materials and common applications of this field.

8066 Introductory Welding (Non-majors)

3

Covers gas and arc applications for occasional users from other trade areas.

8067 Welding Codes and Testing Operations

3

This phase of the Welding program is designed specifically to provide students with different types of welding codes and testing operations. Procedure specifications and information on filler metals, positions, preheat, heat treatment, back strips, preparation of base materials, cleaning and defects will be covered.

8068 Specifications and Estimating

2

Prerequisites: 8201, 8202

This course is designed specifically to provide students with the basic knowledge of metal specifications and estimating; preparing a bill for materials, estimating time and materials for a job and processes used.

8069 Metal Art

1

Prerequisites: 8001, 8002, 8010

Students will study metal art designs and projects relating to fabrication procedures.

8070 Metal Art Shop

1

Prerequisites: 8001, 8002, 8010

Students will have "hands-on" experience making metal art with the use of jigs or fixtures as needed.

8071 Gas Welding and Brazing II

2

Prerequisite: 8001

Oxy-acetylene welding in the overhead and vertical up positions, pipe welding with the oxy-acetylene process and welding of cast iron are covered.

8072 Gas Welding and Brazing Shop II 3

Prerequisite: 8001

This course will cover welding in vertical and overhead positions with different joint designs on plate and pipe. Emphasis will be given on cast iron welding and brazing.

8073 Cutting Processes 2

Prerequisites: 8001, 8002

This course covers the machine flame cutting process, operating principles, pipe cutting, flame gouging, stack-cutting and the use of advanced electronic cutting systems.

8079 Arc Welding VII 2

Advanced arc welding with emphasis on orientation and utilization of submerged arc welding equipment.

8081 Arc Welding Shop II—Practicum 1

This course is supplemental to Arc Welding Shop II (8021).

8082 Welding Certification I—Practicum 1

Provides extended practice and skill development related to welding procedures and standard necessary to qualify welders for A.W.S. certification.

8083 Welding Certification II—Practicum 1

Provides extended practice and skill development to qualify welders on TIG and MIG welding machines in accordance with A.W.S. certification requirements.

8084 Arc Welding II—Practicum 1

Provides extended practice and skill development in arc welding.

8091 Welding Fundamentals I 1

Welding Fundamentals I covers welding practices on mild steel using 60 series electrodes in the flat position. Gas cutting and safety hazards are also covered.

8092 Welding Fundamentals II 1

Covers welding practices on mild steel using 60 series electrodes in the horizontal position. Also covered in gas cutting, safety hazards, and safe practices in welding.

8093 Welding Fundamentals III 1

Covers welding practices on mild steel using 60 series electrodes in the vertical up position. Also covered is gas cutting, safety hazards, and safe practices in welding.

8094 Welding Fundamentals IV 1

Covers welding practices on mild steel using 60-series electrodes in the vertical down position. Also covered is gas cutting, safety hazards, and safe practices in welding.



Related Courses

Communications

8110 Communications

4

Aids students in achieving competence in listening, speaking, reading and writing, with emphasis on writing.

8111 Business Communications

4

Prerequisite: Communications (8110)

Improves student's ability to handle communication situations in business and industry, with emphasis on oral and written communication problems. Student learns to write various types of business correspondence, as well as the psychology behind them.

8112 Technical Communications

3

Aids students in achieving competence in listening, speaking, reading and writing, with emphasis on writing.

8113 Oral Communications

3-4

Focuses on basic elements of the oral communication process, with applications to actual work situations including informative briefings, persuasive presentations, interviews, small conferences and other job-related problems. (May be used either as required or elective course.)

8114 Technical Reporting

3

Prerequisite: 8110 or 8112

Provides understanding of fundamental principles of written and oral reporting, with various kinds of reports discussed and written, and business letters and memoranda related to reporting studied and practiced. (May be used either as required or elective course.)

8115 Critical Reading

2

Practices comprehension and critical interpretation of college level materials: an advanced study of implied and inferred meanings.

8116 Speed Reading

2

Provides opportunity to achieve higher reading speed while maintaining or improving comprehension. Students learn to match reading speed with type of material and reading objective.

8117 Effective Listening

2

Focuses on process of listening. Discusses barriers to effective listening and practices solutions for overcoming them.

8118 Effective Reading

2

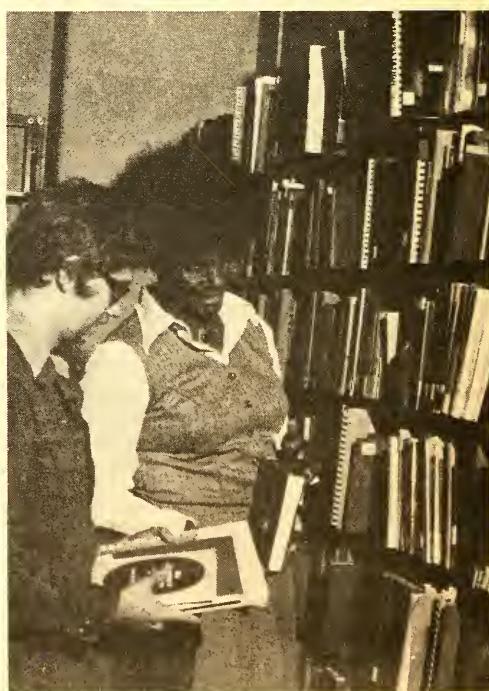
Affords participants opportunity to achieve higher level of reading speed while maintaining or improving current rate of comprehension and retention. Presents techniques for analyzing present reading ability to achieve greater efficiency and effectiveness.

8119 Copywriting

4

Prerequisite: 8110 or 8112

Studies applications of effective copywriting to magazine



and newspaper advertising, including headlines, body copy, direct response, outdoor and transit; introduces scripting for television and radio commercials and studies aspects of language relating to behavioral sciences.

8120 College Study Principles 2

Teaches practical applications in dealing with college-level lecture and laboratory work, including study routine and habits.

8121 Interpersonal Communication 3

This course is designed to reinforce and strengthen the participant's basic interpersonal communication skills. The interpersonal communication process will be broken down and each of its elements studied in depth. Emphasis will be placed on the psychological aspects of communication as they apply to practical job-related situations.

8122 Parliamentary Procedures 1

A business-oriented workshop for Parliamentary Procedures to meet community needs. Such skills are needed for efficient board and other related business meetings.

8123 Total Communication—Manual 4

The course is designed for the instruction and application of: manual alphabet, expressive skills, receptive skills, body language, facial expression, grammatic expression and the psychology of deafness. The intended result is to have total communication skills with the deaf.

8124 Vocational Technical Vocabulary for Deaf 4

The course is designed for the instruction and application of: development of vocational vocabulary relative to each program involving deaf students and development of functional understanding of and skills for vocational technical vocabulary. The intended result is to prepare each student with a vocational technical vocabulary prior to entering a program.

8125 Career Exploration 1

The course is designed for the explanation of and orientation to the various occupational training programs offered at the College.

8126 Personal Management Skills 2

This class has been developed to help the deaf student who has just completed his education at the Deaf School and has had no opportunity to develop independent living skills. The class is designed to instruct the student in different phases of independent living skills that they have not been confronted with before.

8127 Technical Vocabulary for the Deaf I 4

This course introduces to the deaf student a basic or core technical vocabulary for the program area of his/her choice. The terms, meanings and signs are selected to give an overview of the entire program. The course is usually taken prior to actually enrolling in any program classes.

8128 Technical Vocabulary for the Deaf II

4

This course is a continuation of Technical Vocabulary for the Deaf I (8127). It focuses on technical terms associated with second quarter program course work. The meanings and signs are again emphasized very strongly. Some time is utilized in reviewing terms from the previous course.

8129 Technical Vocabulary for the Deaf III

4

This course is a continuation of Technical Vocabulary for the Deaf II (8128). It focuses on technical terms associated with third quarter program course work. Knowledge of the meanings and signs are required prior to completion. Some time is utilized in reviewing terms from the previous course.

8130 Technical Vocabulary for the Deaf IV

4

This course is the last course in the Technical Vocabulary for the Deaf sequence. It focuses on technical terms associated with the student's advanced course work. Knowledge of the meanings and signs associated with the terms is necessary to successfully complete the course.

8131 Total Communications—Manual II 4

The course is designed for the instruction and application of expressive skills, receptive skills, body language, facial expression, grammatic expression, and the psychology of deafness. The intended result is to have expressive communication skills with the deaf.

COMMUNICATIONS/SKILLS ADVANCEMENT

8150 Spelling

1

This course presents traditional rules of American English spelling and has students practice using these rules or patterns. Students also practice using and spelling words which are exceptions to the rules. Much of the course involves memorization.

8151 Developmental Writing (Pre-Tech)

3-4

Studies development of basic writing skills with emphasis on sentence development. (May be taken concurrently with Developmental Reading II or III, but not with Developmental Reading I.)

8152 Developmental Reading I (Pre-Tech)

2-4

Develops decoding skills, vocabulary and comprehension; aids student in developing basic reading skills to junior high school level.

8153 Developmental Reading II (Pre-Tech)

2-4

Develops vocabulary, rate and comprehension to high school level. (Intended as follow-up for students completing Developmental Reading I.)

**8154 Developmental Reading III
(Pre-Tech)**

2-4

Develops vocabulary, rate and comprehension to college level. (Intended as follow-up for students completing Developmental Reading II.)

**8155 Intra-Personal Skills Development
(Pre-Tech)**

4

Provides strategies for helping students perceive themselves as adequate and valuable persons. Seeks to produce progress in student's perceived self-image, with emphasis placed on student's strengths; encourages each student toward increased self-direction.

**8156 Study Skills Development
(Pre-Tech)**

2

Develops basic skills needed for classroom work: note-taking from lectures, textbook reading and outlining, test-taking, etc.

8157 Communications Skills Development

3

On an individualized self-paced basis, each student will cover writing, grammar and vocabulary development oriented toward his occupation.

8160 Developmental Writing II

4

The course is designed as an intensive study in writing aimed at helping the students transfer the use of standard grammar to their writing of groups of sentences. The students will be encouraged to expand their writing from single sentences to groups of sentences based on a central idea.

8161 English as a Second Language

3

A remedial English course designed for students for whom English is not their first language and who have limited English language skills. The emphasis will be on basic language skills and technical vocabulary related to the student's field of study. This course will also be of help for those who may wish to take it for self and/or work related improvement.

MATHEMATICS**8201 Applied Mathematics I**

4

Reviews basic mathematics required for technically related fields; emphasis is on measurement, ratio, proportion, percent and formula evaluation.

8202 Applied Mathematics II

4

Continues study of basic mathematics, including equations, squares, square roots, distances, areas, volumes and right triangles.

8203 Technical Mathematics I

4

Introduces algebra through linear equations in one unknown, graphing; additional topics of powers of ten, scientific notation and the metric system.

8204 Technical Mathematics II

4

Continues Technical Mathematics I (8203), covering

systems of equations, factoring, fractional equations, quadratic equations and logarithms.

8205 Technical Mathematics III

2

Continues study of equations using determinants and metrics, and introducing computer number bases and Boolean algebra. (Primarily for Electronics Technology.)

8206 Technical Calculus I

4

Introduces the basics of analytic geometry, and differential and integral calculus.

8207 Technical Calculus II

4

Prerequisite: 8203

Continues study of methods and applications of differential and integral calculus; introduces differential equations.

8208 Geometry

3

Prerequisite: 8203

Studies geometric topics as they relate to modern technology, including basic laws of geometry, polygons, solid geometry, properties of circles, constructions and right triangles.

8209 Trigonometry

3

Prerequisite: 8203

Studies trigonometric functions, the use of trigonometric tables and scientific calculators, solutions of problems involving right triangle and oblique triangle trigonometry, and graphing of trigonometric functions.

8210 Statistics

3

Prerequisite: 8203

Studies collection interpretation and presentation of data, including measures of central tendency, binomial and normal distributions, hypothesis testing and probability.

8211 Computer Mathematics

2

Studies mathematics relevant to solution and simplification of computer programs, including number bases, logic and flowcharts.

8212 Business Mathematics

4

Studies basic business practices of banking and retail sales, including reconciliation statements, invoicing, simple interest, payroll and inventory; introduces metrics and number base.

8213 Mathematics of Finance I

4

Prerequisite: 8212

Continues study of topics of interest to the business manager: markup, commission, taxes, compound interest; introduces statistics, depreciation and analysis of financial statements.

8214 Metric System

1

Introduces use of metrics with emphasis on everyday applications.

8215 Electronic Calculator Mathematics

1

Trains student in the use of a four-function calculator and scientific calculator.

8216 Commercial Art Mathematics	2	8259 Elementary Trigonometry (Pre-Tech)	2
Includes measurement, scaling and mathematics of type specification and space requirements in newspaper, magazine and TV advertising; includes arithmetic review on extra, individualized basis for those demonstrating need (by examination on student request).		Introduces plane trigonometry concepts, with emphasis on right triangle trigonometry.	
8217 Managerial Mathematics	3	8260 Occupational Mathematics I (Pre-Tech)	2
Reviews special mathematical concepts and techniques involved in managerial decision making.		Introduces mathematics as applied in occupational area in which student is enrolled.	
8218 Mathematics of Finance II	4	8261 Occupational Mathematics II (Pre-Tech)	2
Prerequisite: 8213 Continues Mathematics of Finance I (8213).		Introduces mathematics as applied in occupational area in which student is enrolled.	
8219 Basic Geometric Dimensioning and Tolerancing	3	8262 Occupational Mathematics III (Pre-Tech)	2
Introduces students to the concept and applications of geometric dimensioning and tolerancing (GDT). Students will develop skills relating the GDT system to practical engineering applications for manufacturing and gauging techniques.		Applies mathematics directly to specific examples typical of activities practiced on the job. (Continues Occupational Mathematics II.)	
8221 Geometry II	3	8263 Developmental Mathematics I	2
This course is designed to give the student extensive application of Geometry to practical problems in technology, particularly in the program with which the student is involved.		This course covers whole numbers, fractions and decimals.	
8222 Trigonometry II	3	8264 Developmental Mathematics II	2
This course is designed to give the student extensive application of Trigonometry to practical problems in technology, particularly in the program with which the student is involved.		Basic skills course in percent, ratio and proportion, and the metric system.	
MATHEMATICS/SKILLS ADVANCEMENT			
8251 Arithmetic I (Pre-Tech)	2	8265 Mathematics Concepts	3
Studies arithmetic operations in whole numbers.		At his own pace, the student will cover pre-algebraic mathematics concepts in numbering systems, and operations in addition, subtraction, fractions and decimals.	
8252 Arithmetic II (Pre-Tech)	2	8266 Mathematical Skills	4
Studies arithmetic operations in fractions.		A continuation of Mathematics Concepts (8265).	
8253 Arithmetic III (Pre-Tech)	2	8267 Mathematics for Business I	4
Studies arithmetic operations in decimals.		The basic mathematics of business are applied, including those pertaining to banking transactions, retail and wholesale sales, interest, discounts, credit charges, commissions and the metric system of measurement.	
8254 Intermediate Arithmetic I (Pre-Tech)	2	8268 Mathematics for Business II	4
Studies percents and their use.		This course is a further study of the mathematics that are applied in business, including markup, payroll records, compound interest, depreciation, and financial statements. Also the topics of statistics and computer mathematics are introduced.	
8255 Intermediate Arithmetic II (Pre-Tech)	2	8270 Percent, Ratio and Proportion	1
Studies ratios and proportions.		The student will study the basic concepts relating to percent, ratio and proportion.	
8256 Intermediate Arithmetic III (Pre-Tech)	2	SCIENCE	
Studies measurement, including English and metric.		8301 Physical Science	3
8257 Elementary Algebra (Pre-Tech)	2	Emphasizes energy sources and energy transformations; relates use of energy to effects on the environment and the human population. (For certificate and associate degree programs.)	
Introduces algebraic concepts, including signed numbers, expressions and terms, simple equations and formulas.		8302 Mechanics	3
8258 Elementary Geometry (Pre-Tech)	2	Prerequisite: 8209 Studies machines and mechanisms with regard to their	
Introduces plane and solid geometry concepts.			

stability, movement, effectiveness and construction.

8303 Heat, Light and Sound

3

Prerequisite: 8203

Studies utilization of heat, light and sound as energy forms with respect to their use in modern technology; emphasis on heat, transfer of energy and electromagnetic radiation.

8307 General Chemistry

3

Studies matter in all forms and reactions, as well as basic concepts of atomic structure, bonding, equilibrium, acid-base chemistry, solutions and chemical calculations; also introduces principles of organic chemistry and biochemistry. Course emphasizes student expertise in laboratory techniques and analysis.



8308 General Microbiology

3

Introduces fundamental principles and techniques of microbiology, with emphasis on different types of micro-organisms, their nutrition and metabolism, and their beneficial and harmful relationships to man.

SCIENCE/SKILLS ADVANCEMENT

8350 Science Development in Physics (Pre-Tech)

1

Introduces concepts in physics that may be used as foundation for the technical curriculum (self-paced format).

8351 Science Development in Chemistry (Pre-Tech)

1

Introduces concepts in chemistry that may be used as foundation for the technical curriculum (self-paced format).

8352 Science Development in Biology (Pre-Tech)

1

Introduces concepts in biology that may be used as foundation for the technical curriculum (self-paced format).

8353 GED Science I

3

Introduces concepts in physics, chemistry and biology that may be used as foundation for the technical curriculum (self-paced format).

SOCIAL SCIENCE

8401 Human Relations

4

Concerns the qualities and characteristics which make us human: studies human behavior, motivation, relationships, and human aspects of work; places emphasis on personal awareness and application of concepts studied. (For all divisions as required or elective course.)

8402 Applied Psychology

4

Helps students discover and actualize unique capacities and personal strengths in themselves and others, with emphasis on discovering, clarifying and affirming potential for living more fully in each individual.

8403 Psychology of Advertising

4

Covers principles of psychology as they relate to advertising: consumer behavior, life styles, design and color concepts, motivation, consumer self-image and roles. (Required by Commercial Art and Industrial Photography.)

8404 Environmental Psychology

4

Covers the concepts involved in designing space and objects for human work, living and leisure. (Required for Interior Design.)

8405 Social Problems

4

Exposes students to study and analysis of contemporary social problems; examines topics such as urban life, technological advance, ecology, crime, drug abuse and over-population, with emphasis on effect upon individual accomplishment and occupations.

8406 Employment Orientation

2

Investigates employment opportunities in general area of study of student's interest and enrollment, including interviews, study of occupational information and sources, exploration of job opportunities and research into specific jobs and fields.

8407 Career Preparation for Women

2

A seminar based upon self-assessment, planning one's job campaign, and the construction of a resume with preparation for the initial interview.

8408 Coping with Employment

3

The course is designed to help the student cope with the psychological and sociological constraints associated with the typical work setting.

8410 Social Science Development

3

Introduces basic social development in context relevant to employment, job training and job seeking.

8411 Developing Personal Potentials

3

Aims toward improving employability and stability of trainees through development of personal potential.

8412 Career Assessment

3

Designed to assist people in developing decision-making skills in career planning and career management. Participants will undergo self-assessment and career development exercises and will be trained in resume preparation and job interviewing techniques. Recommended for persons preparing to enter the job market and for those considering a career change.

8450 Business Careers Development

2

Designed to assist students in matching their talents, skills, and interest with career opportunities in business. Students will develop and assess their own personal inventory and receive an orientation to the career programs at Ivy Tech.

8451 Introduction to the World of Work

2

A course directed toward the mental, social, educational and vocational development of the student. Primary goal is to assist the student in becoming marketable and successfully employed.

8501 Field Study/Cooperative Education

1-15

Offers special project or research type case study, including data collection and data analysis specifically related to occupational area. Course should be a field project within the framework of actual working experience in business or industry, or a structured cooperative experience in which the student receives a stipend or regular wages.

8502 Cooperative Education Seminar

3

Provides student on training assignments the opportunity to share work experiences in a classroom situation with the program coordinator and other co-op students. Includes thorough orientation to cooperative education, employability skills, basic career planning and career development.

8551 Tutorial Assistance Laboratory

1-15

Provides extended practice and skill development opportunities directly related to one or more specific courses.

9305 Technical Mathematics for Health Occupations

5

Provides health occupations students with a basic course in technical mathematics, including a review of arithmetic, basic concepts of algebra, graphing geometry and logarithms, including also 12 hours of correlation problems specific to the students' technical fields.

9306 Health Careers Mathematics

3-5

Provides basic mathematics background needed in subsequent health occupations program courses, including basic arithmetic, exponents, directed numbers, operations of arithmetic using scientific notation, Roman numerals, conversions involving metric, apothecaries and household systems of measurement, temperature conversions between Centigrade and Fahrenheit units, simple equations, and the construction and interpretation of graphs.

9307 Health Careers Biology I

2

Introduces fundamental biological concepts of organization, cell structure and respiratory processes.

9308 Health Careers Biology II

2

Introduces fundamental biological concepts of cellular control mechanisms in a 2-hour course, with emphasis on processes of protein synthesis, gene control, development, differentiation, reproduction, basic genetics and cybernetic systems.

9309 Health Occupations Terminology

2

The basic terminology required of paraprofessionals throughout the health occupation instruction in their allied health specialty areas.

9310 Pharmacology for Licensed Practical Nurses

4

Presents principles of action for drugs, correct dosage, methods of administration, symptoms of overdose and abnormal reactions that may arise from individual differences in particular patients.

9311 Mathematics for Pharmacology

2

Presents basic principles of computation for administration drugs.

9312 Health Careers Chemistry

3

Introduces students to basics of chemistry in a four-week module, including an introduction to basic concepts such as atoms and molecules, and a description of solutions by different means, such as percent by weight; also equilibrium systems with emphasis on acids and bases, and buffer systems.

9314 Basic Techniques for Ward Clerks

6

Prepare non-professional workers with clerical and receptionist duties of the nursing unit under the supervision of the charge nurse on the unit.

9315 Nurse Aide Procedures and Practicum I

6

Prepares nurses' aides and orderlies with skills necessary to perform selected activities under direct supervision of the professional nurse. These include care of the patient unit, personal care of the patient, vital signs, admission procedures, nutrition and patient safety, nursing in specific disease conditions, employment practices and procedures, and clinical experience.

9316 Food Preparation and Service for Diet Aides

6

Provides basic instruction in safe food handling, health practices and sanitation, stressing care and use of equipment, and safety requirements. Students receive classroom instructions and on-the-job practice in basic skills in management of work, preparation and services of food in hospitals, nursing homes, homes for the aged, and child care centers.

9317 LPN Team Leadership

3

Introduces Licensed Practical Nurse (LPN) to some basic concepts and skills of leadership which may be used in planning, implementing, directing, and evaluating the nursing care of patients.

9318 Child Health and Behavior

2

Briefly covers normal changes in the health and actions of infants and children, and will assist students in recognizing illness in children; teaches skills that are useful in caring for sick children, with special emphasis on when to call the doctor for a sick child and how to follow the doctor's instructions.

9319 Nurse Aide Procedures and Practicum II

6

This is a continuation of Nurse Aide Procedures and Practicum I (9315).

9320 Medical Ethics/Personal Health

2

Presents ethics of medicine, professional conduct and personal habits expected of allied health workers.

9321 Medical Linguistics

2

Presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms; teaches students meanings

of medical words through the Greek and Latin parts, correct spelling of terms, and intelligent use of medical dictionary.

9322 Biophysics for Health Occupations

2

Prerequisites: 9306 and permission of the instructor

Presents practical application of principles of physics and mathematics to technical health occupations, with emphasis on principles underlying circuitry, optics, electromagnetic and other types of ionizing radiation; stresses problem solving specific to students' career fields.

9324 Arts and Practices for Nurse Aide/Orderlies

6

Studies skills and attitudes needed by nurse aid/orderlies, providing knowledge of health care institutions and the health care team.

9325 Survey of Anatomy and Physiology for Nursing Assistant

1

Each of the basic bodily systems will be surveyed. The student will be able to state the purpose of each system, the salient elements and the related physiological processes as well as all the medical terminology which would be appropriate for this survey course.

9326 Health Careers Chemistry Lab

1

A two-hour laboratory course to permit the student to achieve the competencies required in the pre-program entry level in Health Occupations.

9328 Nurse Aide and Orderly

9

A study of the skills and attitudes needed by a nurse aide/orderly. Provides knowledge of health care institutions and the health care team. Emphasis will be placed on skills and attitudes necessary for the nurse aide/orderly to function within this job description.

9329 Working Relations

3

Presents various theories of group behavior with reference to application in the work situation. Fundamentals of communications will be correlated with methods and systems used in an organization. Personnel policies and procedures will be explored.

9331 Medical Terminology for Nurse Aide

2

Includes nomenclature of nursing procedures, diagnosis, diseases and their causes, abnormalities, injuries, surgical procedures, hospital departments, equipment and titles of health care personnel. Understanding and ability to use the knowledge gained will be stressed and practice will be required.

9332 Mathematics for Nurse Aide

5

This course is designed for those students who wish to enter a Health Occupation as a Nurse Aide/Home Health Aide. The fundamentals of mathematics concepts as related to health care are discussed.

9333 Pharmacology and Medication Administration for Unlicensed Personnel

5

The purpose of the course is to teach nurse aides

employed in nursing homes to administer oral drugs safely.n to the study of common disease.

9334 Health Care Skills

2

The student will learn to take basic vital signs, relating them to normal findings and comprehend their significance; demonstrate proper cardiopulmonary resuscitation and pass the standardized National test for proper recognition by the American Red Cross and/or the Heart Association.

9350 Medical Law and Ethics

2

Studies ethics of medicine and medical practice, stressing legal requirements and implications to medical professional and sub-professional practices.

9353 Anatomy and Physiology I

4

Studies the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology; also an introduction to the study of common disease.

9354 Anatomy and Physiology II

4

Continues Anatomy and Physiology I (9353).

9355 Medical Terminology

2

Teaches basic terminology required of paraprofessionals throughout the health occupation instruction in their allied health specialty areas.

9356 Disease Conditions I

3

Presents basic concepts of disease, its causes, and the changes in body functions that occur, with special emphasis on functional disturbances, correlating patient symptoms to emergency and in-patient treatment.

9357 Disease Conditions II

3

Continues Disease Conditions I (9356).

9358 Pharmacology

3

Stresses classification of dosage of drugs, and interactions and incompatibilities; also includes drug administration, weights and measurements, and preparations, plus special precautions and legal aspects.

9359 Cardiopulmonary Resuscitation

1

Develops proficiency in mouth-to-mouth breathing, mouth-to-nose breathing, and mouth-to-stoma breathing. Students will perform one resuscitation (CPR) for an adult, two resuscitation (CPT) for an adult and a CPR for infants or small children. Students will be able to care for choking adults and infants, conscious and unconscious.

APPRENTICE COURSES

9409 Swimming Pool Maintenance

5

Designed to assist individuals in gaining the necessary skills and knowledge to operate and maintain private and commercial pools. Among the subjects to be covered are: chemical treatment for control of bacteria, algae and viruses, ph balance, testing methods/kits, disinfection, maintenance, scale and corrosion prevention, and safety and health factors.

9410 Energy Conservation

Designed to give the student technical knowledge and specific skills required to perform conservation measures relative to the most common energy uses. The student will learn and utilize the basic principles of energy conservation and efficiency.

9411 Mechanical Drawing I

An introduction to drafting which includes interpretation of lines, view positions, conventions and standard signs, symbols and abbreviations used in prints and drawings; use of instruments, simple geometric constructions, orthographic projections, scaling and an introduction to dimensioning.

9412 Shop Mathematics I

Consists of review including addition, subtraction, multiplication and division of whole and mixed numbers; covers fractions, decimals and percentages; uses practical industrial shop problems wherever possible.

9413 Building Trades**Blueprint Reading 1**

The study of all signs, symbols, dimensions and abbreviations necessary for the logical interpretation of simple construction blueprints.

9414 Blueprint Reading I

Instruction and practice in the study of working drawings and application of understanding from the print to the working part, views, details, interpretation of dimensions, signs and symbols are included.

9415 Mathematics and Blueprint Reading I

Consists of review including addition, subtraction, multiplication and division of whole and mixed numbers; covers fractions, decimals and percentages; uses practical industrial shop problems wherever possible; also instruction and practice in study of working drawings and applications of understanding from print to working part, including views, details, interpretation of dimensions, signs and symbols.

9416 Basic Diemaking I

Covers basic details, techniques and theory of stamping dies, studying essential facts of cutting and forming operations to achieve desired results.

9417 Advanced Diemaking I

This course extends in logical sequence the study of die construction and design as presented in Basic Diemaking I and II (9416 and 9425). Topics studied include progressive compound and inverted dies, die-to-press relationships and automatic feeds.

9419 Basic Molding

Covers composition and characteristics of various plastics materials, studying design factors of compression, transfer and injection molds along with mold components, heating and cooling principles and application as applied to designing and maintaining a functional mold tool.

4 9420 Mechanical Drawing II

Further drawing includes precision dimensioning, sections, pictorial drawing, sheet metal layout, fasteners, auxiliaries and an introduction to assembly drawings.

9421 Shop Mathematics II

Includes linear and square measure, volumes, square roots, ratios and proportions, and an introduction to algebraic functions, sined numbers, grouping and axioms using practical shop math whenever possible.

9422 Building Trades**Blueprint Reading II**

The in-depth study of building construction blueprints with special emphasis on commercial construction techniques, both general and mechanical.

9423 Blueprint Reading II

The continuing study of mechanical blueprints and their relationship to the working piece advanced and somewhat complicated prints for parts, simple machines and tools.

9424 Mathematics and Blueprint**Reading II**

Covers linear and square measures, volumes, square roots, ratios and proportions, and an introduction to algebraic functions, sined numbers, grouping and axioms; also study of mechanical blueprints and their relationship to the working piece; also covers advanced and somewhat complicated prints for parts, simple machines and tools.

9425 Basic Diemaking II

Covers primary die components, including punches, punch plates, die blocks and strippers, as individual entities in addition to their function as part of the complete die.

9426 Advanced Diemaking II

Studies more elaborate and involved than Basic Diemaking; including dieforms, draw dies, secondary operations, trim, notch and shear dies.

9427 Fundamentals of Energy Technology

Designed to give the student an overview of the field of energy conservation and use, and to provide descriptions of job functions typical to energy technicians. The course material is organized to show the compatibility of the total curriculum and the purpose of the approach chosen.

9430 Mechanical Drawing III

Further drawing includes assembly and detailed assembly drawings; tolerance dimensioning and true position indicators and gauge designing.

9431 Shop Mathematics III

Covers addition, subtraction, multiplication and division of monomials and polynomials, equations, factoring, fractions, fractional and literal equations, exponents and radicals, linear equations and quadratics using shop mathematics whenever possible.

9432 Blueprint Reading III

3

This course deals with that particular form of blueprint reading that applies to the electrical trades. All signs, symbols and abbreviations used on schematics will be covered.

9433 Mathematics and Blueprint Reading III

4

Deals with addition, subtraction, multiplication and division of monomials, polynomials, equations, factoring, fractions, fractional and literal equations, exponents and radicals, linear equations and quadratics using shop mathematics whenever possible; also deals with particular form of blueprint reading applying to electrical trades, and all signs, symbols, abbreviations used on schematics.

9434 Stained Glass Techniques I

1

The course will cover the fundamentals of working with stained glass; window designing, cutline drawings and layout, pattern making, stained glass selection, glass cutting, leading or glazing, soldering, cementing, window clean-up and installation. Class projects will be limited to a leaded, stained glass window of no more than two square feet in size.

9435 Stained Glass Techniques II

1

The student, using the fundamentals learned in Stained Glass Techniques I (9434), will construct three-dimensional items such as Tiffany-style shades and terrariums. The copper foil technique will be explored in depth as the intricacy of project designs is increased.

9436 Upholstery Fundamentals

1

Training is provided in upholstering simple furniture pieces such as stools, occasional chairs, pull-up chairs, and slip sets. Through this practical work, the student learns to perform the operations of simple springing, first stuffing, button tufting and trimming. All skills performed without sewing.

9441 Shop Mathematics IV

3

Studies definitions and descriptions of geometrical terms, axioms and theorems, explanations regarding propositions dealing with straight lines, triangles and circles, and applications to practical shop problems.

9442 Upholstery I

3

Introduces the student to the processes involved in the upholstering of household furniture. Students will learn the techniques of furniture fabric stripping, spring tying, frame reinforcement, pattern layouts, fabric cutting, tool usage, and sewing and button machining.

9443 Upholstery II

3

Continuation of Upholstery I (9442). Students are trained in methods of furniture re-design, fabric composition and measurement procedures.

9450 Shop Mathematics V

3

Includes definitions of the trigonometric functions, construction and use of tables, interpolation solutions of right triangles, and applications of trigonometry to practi-

cal shop problems; also computations made with legs and functions of the angles.

9460 Mathematics VI

3

Covers obliques by altitude construction method, laws of sines, cosines and co-tangents, 1/2 angle formula and tangent law, with emphasis on shop and shop design type problems.

9470 Review of Preapprenticeship

3

The course is designed to review the basic skills needed for entry level apprenticeship training. The student will be tested in mathematics, basic mechanical principles, spatial relationships, abstract reasoning and communications skills.



APPENDIX

BOARDS OF TRUSTEES

The College is governed by an eleven-member State Board of Trustees appointed by the Governor of the State. Board membership was designed by the Indiana General Assembly to represent various economic interests: manufacturing, commerce, labor, agriculture and the public-at-large. Seven-member Regional Boards of Trustees are appointed by the State Board of Trustees and charged with the responsibility for governing at the regional level. These Board members represent the same economic

interests as the State Board of Trustees. Through this regional system, the College keeps abreast of changing technology and the unique occupational training needs of local communities, the state and the nation. This enables the College to provide specific training opportunities from which students can gain definable job skills within their individual capabilities to cope with the complex dynamics of modern society. Following is a list of State and Regional Boards of Trustees:



Pictured left to right: Mr. Maurice J. Ferriter; Dr. Montague M. Oliver; Mr. E. William Luzius, *Chairman*; Mr. Wendell D. Vandivier, *Secretary*; Mr. James B. Igleheart, *Vice Chairman*; Mrs. William F. McNagny; Mrs. Guy E. Gross; Mr. William F. Justice, (past member); Mr. John V. Barnett; and Mr. Keith J. Holmes. Not pictured are Mr. Clifford K. Arden and Mr. Donald H. Heckard.

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The State Board of Trustees appoints a President to administer the affairs of the College. The Vice President/Instructional and Administrative Affairs, Vice President/Regional Operations and Vice President/Treasurer at Executive Headquarters and the

Vice President/Dean of each of the thirteen Regional Institutes of the College reports to the the President. Following is a list of the administrative officers of the College, commonly known as the President's Council:

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COLLEGE COUNCILS

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The President's Council consists of the President of the College, Vice President/Instructional and Administrative Affairs, Vice President/Regional Operations, Vice President/Treasurer and the Vice President/Deans from the thirteen regional institutes of the College. The council is chaired by the President and serves as a forum for information exchange and counsel to the President in the administrative matters of the College.

Education Council

The Education Council consists of the Vice President/Instructional and Administrative Affairs, Director of Data Services, College Registrar, Director of Curriculum Services and the Director of Planning and Facilities Services. This council also consists of the Directors of Instruction and Directors of Student Services from the thirteen regional institutes of the College. The council is chaired by the Vice President/Instructional and Administrative Affairs and serves as a forum for information exchange and pursuit of solutions to specified issues.

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